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SEPTEMBER 1997

AUSTRALIAN

# Macworld

AUSTRALIA'S FAVOURITE MAC OS AND POWERPC MAGAZINE

## Reviews

Director 6  
PowerCenter Pro  
Power Macintosh 5500/6500  
Virtual PC  
Painter 5  
4th Dimension 6.0

EXPERT GUIDE TO  
**Illustrator 7**

Set up a LAN  
FOR UNDER  
**\$1000**

which 17 inch monitor  
fits you best?





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**COMPUTER SYSTEMS**



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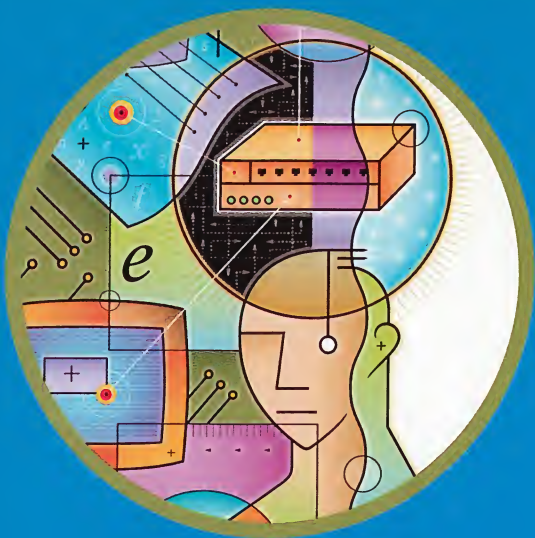
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\*Adobe® Photoshop LE (PhotoDeluxe™ on GT-5000) and Omnipage LE. EPS 0160/R The HALE Agency





▲ *Making the connection* — p32

## Features

### 32 **Connect your workgroup**

Boost your productivity by making your Macs one big happy family. Find out how easy and affordable it can be to create your own network

### 38 **17-inch screen stars**

Size does matter, but there's more to 17in monitors than just real estate. Macworld Lab examines the options

### 46 **Illustrator's new face**

Illustrator 7.0 promises greater similarities to and closer integration with Photoshop. Discover what Illustrator's brave new face has to offer

### 73 **eMate 300 competition**

Atomic Mac Woman needs a sidekick. Could you be the one?



# Contents

SEPTEMBER 1997, VOL. 13, NO. 8

Display until 3 September

## Reviews

### 52 **Director 6**

Now with an all star cast

### 54 **PowerCenter Pro**



### 55 **Virtual PC**

Oh yes, I'm the great pretender

### 56 **Power Macintosh 5500 and 6500**

Graphite or platinum, your choice

### 58 **Painter 5**

Or how I learned to paint without using paint

### 60 **4th Dimension 6**

The database you can browse

### 62 **Photoshop 4 Type Magic**

### 63 **From Paper to Web**

### 64 **MacSpartan**

### 64 **QuickKeys**

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# Departments

## 8 Letters

## 10 News

Gil Amelio resigns as CEO; BeOS on Intel?

## 25 Product Update



## 74 Marketplace

All the Macs that fit, we print

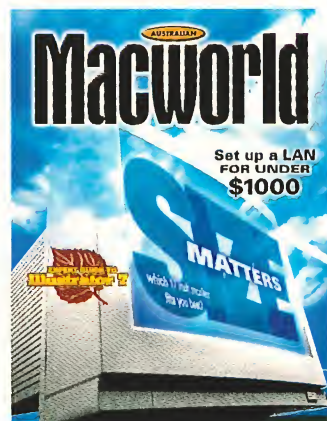
## 76 Quick Tips

## 78 Joy of Mac

On dogcows

## 80 Commentary

What of Lazarus



### Art and Photography Credits

Cover Mark Facchin  
p14, 20 Timothy Cook  
p21 K Daniel Clark  
p24 Kevin Candland  
p32 Jeffery Pelo  
p38 Paul Franz-Moore  
p47 Steven Lyons  
p73 Edwina Enderby

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# The Best Just Got Better!

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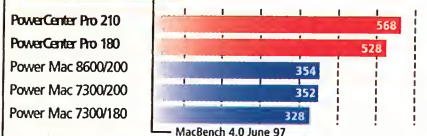
### What You Get :

- A Potent Mix of High-Speed Parts
- Huge 1MB Level 2 Cache
- Fastest Mac Bench Scores Ever
- New 3-D/2-D Rage II Graphics Acceleration
- Fast 60MHz Bus Speeds

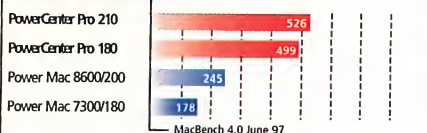


## 8600/7300 KILLERS

### CPU PERFORMANCE - Mid Range



### PULISHING GRAPHICS - Mid Range



## SPEED KINGS

**New!**



**New!**



Monitors sold separately

PowerComputing

## PowerCenter Pros Fastest Ever!

Mac OS Mini-Tower Systems

604e/180

**Mega\$Value**  
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- Built-In 3-D/2-D Rage II Graphic Acceleration
- 1Mb Level-2 Cache
- 16 x CD-ROM Drive
- 604e/180MHz or 604e/210MHz
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- Upgradeable CPU Daughter Card
- 2Mb VRAM
- 2GB Ultra Fast HD
- Three PCI Expansion Slots
- Internal Fast SCSI (10Mb-Sec)
- Adaptec Ultra Fast SCSI Card
- Extended Keyboard & Mouse

604e/210

**Mega\$Value**  
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**New!**

PowerComputing

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Mac OS Full Tower System

**HUGE 450MHz Power**

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Power-TowerPro 225 .....\$5999 Ex Tax

**New!**

PowerComputing

## Power-TowerPro 604e/250

Mac OS/Full Tower System

**NOW 250 Mhz**

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# Letters

## Apple in retreat?

I was just writing to inquire about something that happened the other day. I walked into a Harvey Norman store in Sydney, into the computer section looking for the small Mac software area amongst the massive area for PC and console systems. When I could not find it, I inquired about where the Mac software was, to be told that Apple had withdrawn from the retail market altogether.

Do you know what the hell is going on? It was bad enough owning a superior system with much less software, but, it was better than none at all. Rhapsody had better be good — it looks like the only thing that can break Apple's fall.

*Owen Ticli  
via Internet*

Apple Australia has decided to reduce its presence in the retail mass market and concentrate on specialised outlets such as Apple Centres. This leaves the mass market open for companies like Mitsui (with Power Computing clones) or the other clone distributors to move into the lower end of the market.

It has always been difficult for Apple to compete in that sector of the market, where sales staff tend to be knowledgeable only about Intel-based PCs and Windows software. While it's easy to sell someone on the advantages of one computer over another because it has a faster processor or a bigger hard drive, it's far more difficult to express the advantages of one OS over another, so many sales people simply didn't bother. Apple was throwing money and resources into a market that was not willing to support it. I am, of course, not referring to any retailers in particular.

Lately it has been even more difficult for Apple to compete for the consumer market, since the profit margins are much smaller than on high-end equipment that gets sold to pub-

lishers and businesses. In the medium term, Apple needs to concentrate on increasing its profitability, and the mass market is not the place to do that.

The downside of this is a lack of visibility for Apple hardware on Myers, Brashs and Harvey Norman shelves. However, if you consider that most of that visibility consisted of Macs sitting disused with a screen saver running in the corner gathering dust while the sales staff demonstrated applications and games on Windows, I think it's visibility that the Mac can live without.

Apple in the US is planning a very large marketing campaign for the release of Mac OS 8, and while Apple Australia has not announced any plans, it would be a good opportunity to raise awareness of Apple innovation and remind people that the Mac is far from dead.

— M.J.C.P.

## Correction

I noticed an error on page 19 of the July *Australian Macworld*.

It says "...users who are running OT 1.1.2 must install OS 7.6.1 immediately after they install OT 1.1.2"

OS 7.6.1 uses OT 1.1.1 and would require OT 1.1.2 to be reinstalled after installing OS 7.6.1, not vice versa.

*David Bakkers,  
Apple Customer Response Centre, Sydney*

Oops. — M.J.C.P.

## Pavlovian response

I begin to salivate before your mag is due out! Keep up the good work. I'd like to point out one minor thingy regarding your May HTML article (page 20). You state that the World Wide Web Consortium uses the abbreviation "W3C". This is, technically, incorrect — I would imagine that they use a superscripted 3 as this

is a standard in the technical world? If this is not the case, then I'm sure you'll enlighten me with a suitably curt and biting reply.

*David Trainer  
via e-mail*

I think the best response to this minor thingy is to show you the W3C logo, as downloaded from the W3C Web site at <http://www.w3c.org/>



For "curt and biting", I recommend that you read magazines about Nirvana and Mike Tyson. — M.J.C.P.

## DOS things

I run a DOS-based system at work, not by choice: it's the only alternative in my industry. Once per week I have to format and initialise a floppy disk to send claim data to a government department — they still haven't heard of modems. I have been doing this for the past five years.

Last week the DOS system decided not to format the disk in drive A; it thought it was time for a change and formatted drive C (the hard disk!)

Every last scrap of data gone. I bet a Mac can't do that!

Is it that DOS has an in-built empathy for the concept of voluntary euthanasia? Have we upset the planetary alignment by landing on Mars? I put these questions to the technician who rebuilt the system.

His reply: "It's just one of those DOS things."

I know what I would like to do to those DOS things — give me my Mac any day.

*John Dolton,  
Erina Heights, NSW*

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# News

## IN THIS ISSUE

Intel Be **p11**

CHRP premieres **p14**

High-end gets higher **p17**

Workflow in cyberspace **p20**

QTVR gets mainstream **p24**

## Amelio ousted

APPLE SENDS THE DOCTOR AWAY

**T**he board of directors of Apple Computer forced Chairman and Chief Executive Officer Dr Gilbert Amelio to hand in his resignation on the 9th of July, after he had served for seventeen months. The announcement came just weeks before Apple announced a smaller than expected quarterly loss (\$US56 million) and less than a month before Mac OS 8 was delivered to customers.

Officially, the board felt that Amelio was not sufficiently "customer focused" to lead the company, and was not able to meet the shareholders' expectations of profitability and growth. It said that his "profile" did not fit with Apple's immediate goals. In plain English, they got impatient with him failing to meet his own timetable for profitability and, as one Apple exec put it, "he was so focused on the micro-processor level, he couldn't see the bigger picture".

The news of Amelio's departure was met with jubilation from some quarters and ambivalence from others. Almost no-one seemed unhappy to see him go. Amelio

had been strongly criticised for his management style both by sections of the press and, privately, by some within Apple. In the months prior to his departure, he had reportedly become remote and removed from the day-to-day operation of Apple. By contrast, when he joined the company he was applauded for his understanding of the technology and his "hands on" approach to learning how Apple operated.

Amelio was brought into the company in February 1996 when the board fired Michael Spindler after months of speculation and internal division. At the time, the company's stock price was diving, sales were plummeting, the Copland project was wandering aimlessly, licensing the OS was marginal on the company's agenda and damaging issues such as quality control were affecting Apple's image and legendary customer loyalty.

Seventeen months later, the company has a coherent operating system strategy based around Rhapsody, many of the features of Copland are about to become real as Mac OS 8, the company has strong and

innovative products such as 233MHz notebooks and 300MHz consumer-level machines, quality issues are tightly controlled and, most importantly, Mac clones are an accepted part of the Mac OS landscape.

Yet, Amelio has been shown the door.

As Apple Australia's General Manager Steve Rust told *AMW*, "There are different imperatives for an incoming CEO to what Gil found. Now, we're not bleeding badly, our hardware and software strategies are working and in place, people are settled into their positions and they're keen to get on with the job. What we need to do now is improve our communications, improve our marketing. We have to be a lot more aggressive."

Until a new CEO is found, Chief Financial Officer Fred



Who's the boss? Jobs and Amelio in January



Anderson will be Acting CEO, and Steve Jobs will have "an expanded role" in advising the board. Part of that role will be selecting the new chief executive, as part of a committee that includes Jobs, Anderson, board vice-chairman "Mike" Markkula and Edgar S. Woolard, Chairman of duPont chemicals and, reportedly, the man who asked Amelio to go.

#### HANCOCK FOLLOWS AMELIO

Ellen Hancock, the VP of Technology who followed Amelio to Apple from National Semiconductor, was asked to resign the day after Amelio received his marching orders. She has said that she did not feel that she would be able to function properly under the new management in Amelio's absence, while other sources indicate that Steve Jobs, whose own role in the ouster remains unclear, did not believe that she was "technical enough" to handle such a responsible role in the company.

Hancock spent more than twenty years at IBM before moving to National Semiconductor, where she and Amelio were credited with turning around that company's flagging fortunes. When Amelio was recruited to Apple, Hancock was expected to replace him as Nat Semi's CEO. The job did not eventuate, and she followed Amelio to Apple.

At Apple, she was responsible for improving the company's quality control and technology strategies. She recognised that the Copland strategy was irretrievably adrift and killed it, then set about searching for a replacement strategy. The

NeXT acquisition followed, after which many of her responsibilities were taken over by incoming NeXT personnel, notably Avie Tevanian. Her dissatisfaction with that outcome has been widely reported, and it has often been rumoured that she was on the verge of leaving.

#### JOBS IN THE ASCENDANT?

Speculation about who will replace Gil Amelio as chairman and CEO has been rife, and made more so by the fact that the board does not appear to have anyone waiting in the wings. The front runner in the betting is of course Steve Jobs, who has been acting as an adviser to the board since Apple acquired his company, NeXT Software, in December. Since Amelio's sacking, he has taken much more responsibility in the company and has, effectively, been acting as its chairman.

Speculation has centred mainly on the prospect of Jobs as chairman of the board with a more business-like person handling the day-to-day role of CEO.

Apple's stock price has been buoyant and Mac fans and analysts alike have rejoiced at the prospect of having a genuine certified Silicon Valley legend at the helm. The downside is that Jobs is infamous for his overbearing style and "whim of steel", which may make life very difficult for an incoming CEO and may hamper Apple's efforts to find the best person to work alongside him.

Jobs himself has said he does not want to be CEO because it would take him away from Pixar, the computer animation company he acquired from Lucasfilm in 1986 for \$US10 million. His stake in Pixar is now reported to be worth \$US500 million after the

box office success of "Toy Story" and a ten-year, six-movie deal signed with Disney which will produce a sequel to "Toy Story" next year.

In a letter to Pixar employees, he said that Apple had offered him both the CEO job and the chairmanship and he had declined, although he had agreed to step up his involvement with the company he founded. However, some have speculated that with the Disney deal in place, Pixar could effectively run itself for the next five years, and Jobs would be free to provide vision and long-term strategy to Apple while someone else handled the details.

A final announcement is expected at the Macworld Expo in Boston, where Jobs will be delivering the keynote address. Gil Amelio was to have performed that function.

## Be ready to go cross platform

**B**e OS, the operating system Apple left at the altar when it acquired NeXT last year, will be available for Intel hardware in January. A demonstration of Be OS running on a multi-processor Pentium-based machine is expected at the Macworld Expo in Boston.

Since the Be OS was built from the ground up as a multitasking, multiprocessing OS for PowerPC hardware, it was seen as a logical choice for Apple to acquire after the Copland project was cancelled. The acquisition of NeXT Software and its OpenStep operating system took many by surprise.

When asked by the press to justify the choice of OpenStep over Be OS, Apple officials have pointed to the availability of OpenStep on Intel, and therefore the potential for the next-

generation Mac OS to cross hardware barriers, as a key advantage.

Be Inc is obviously out to reduce that advantage. Be CEO Jean-Louis Gassée has said that the company needs to avoid limiting its growth potential to that of the PowerPC platform, and cites Apple's ongoing disputes over licensing arrangements as casting doubt on that potential. He has said that Intel approached him, rather than the other way around, but he sees it as an ideal partnership.

Even though Be only started selling the final version of its OS a few weeks ago, it has been aggressively seeding beta copies to developers and has garnered a good deal of support. In addition, several Mac OS licensees, including Power Computing and Motorola, have licensed the Be OS.

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## First CHRP Mac speeds past all others

MOTOROLA'S STARMAX 6000 LINE FEATURES HIGH-SPEED CACHING

**T**he first of a new generation of Mac systems based on the Common Hardware Reference Platform (CHRP) are about to arrive.

Motorola Computer Group has announced the first CHRP Macs: its new high-end line, called the StarMax Pro 6000, will be demonstrated for the first time at Macworld Expo in Boston.

In tests by Macworld Lab, the StarMax Pro 6000 machines pull far ahead of older machines, because they take advantage of CHRP's 66MHz bus speed (most Macs today use 40MHz to 50MHz buses). They also gain much of their speed from the PowerPC 750's (code-named both Arthur and G3) new caching scheme, called backside cache. Both backside cache and faster system buses help alleviate many of the performance bottlenecks of older systems, raising the overall performance bar for this new generation of Macs.

### PPC 750's SPEED SHOT

In most Macs today, the CPU and cache communicate through the system bus — which typically operates at 40MHz to 50MHz speeds. But the PowerPC 750's backside cache uses a separate, higher-speed cache connection reserved for CPU-to-cache (and cache-to-CPU) communications. The PowerPC 750's backside cache communicates with the CPU in 1:1, 2:3, 1:2, or 2:5 ratios. So, for example, a 300MHz PowerPC 750 can communicate with cache using a 300MHz, 200MHz, 150MHz, or 120MHz cache bus — several

times faster than the previous limitation of the 40MHz to 50MHz bus speed.

Set to ship by the end of September, the StarMax Pro 6000/233, the 6000/266, and 6000/266 XL provide 512K of cache, which communicates with the CPU in a 2:1 ratio, for 117MHz and 133MHz cache buses, respectively.

The StarMax Pro 6000/ 300, expected to ship in October, will come with 1Mb of backside

cache communicating with the CPU in a 3:2 ratio, for a 200MHz cache bus.

### OTHER BENEFITS

In addition to improving raw performance, the CHRP specification also helps create a more open platform, since the Mac licensees will no longer be using Apple-designed motherboards — whose circuitry is often partially undocumented, requiring the clone makers to turn to Apple for help.

Clone makers should be able to move at their own pace and not rely on Apple for assistance.

CHRP also uses industry-standard components, so the Mac makers (including Apple) have a wider choice of suppliers, can buy components at lower prices, and are less likely to be faced with a parts shortage.

And CHRP allows the faster adoption of emerging technologies, such as the Universal Serial Bus and the FireWire high-speed peripheral bus, as well as of existing technologies that would give Mac owners more choices. For example, the CHRP specification supports the PC's ISA bus, which Mac makers could incorporate into their systems so Mac owners will be able to use any internal PC modem with their Macs.

## Java for portable documents

JSTREAM OFFERS AN ALTERNATIVE TO PDF

**A**dobe's Portable Document Format (PDF) is great for high-quality, precisely formatted documents. But PDF's huge file sizes can be a high price to pay, especially when sending the files over the Internet.

JStream (<http://www.jstream.com>) believes it has the answer in its JPress Document Format (JPD), a proprietary compression technology based on the company's text-handling libraries, which are written in Java.

Built-in viewer JStream's WiredWrite publishing application, scheduled to ship this September, translates documents into the JPD format — which compresses them significantly — and attaches a small (70K), Java-based viewer. The resulting files retain all formatting, are rapidly searchable, and can be read on any computer running a Java virtual machine. Also, you can reformat text as you read it; if you resize the window, a JPD document reflows to reflect the change.

Java limitations JStream has far to go before JPD will be widely accepted, largely because Java's printing and typography features are embryonic at best. Also, while many current applications can directly output PDF files, users must filter documents through WiredWrite to produce JPD files. And PDF, given its roots in PostScript and growing acceptance in the print world, will likely be the electronic document format of choice for high-quality output. But JPD may offer a viable alternative when PDF is too much and HTML is not enough.





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## Mac OS 8 now shipping

At long last, the wait is over. From the 8th of August, Apple is shipping Mac OS 8 through retail and bundled with computers. All Macs sold after 8 August will have a Mac OS 8 CD in the box, but Mac OS 7.6 installed. Macintoshes pre-loaded with Mac OS 8 should follow in a month or so. At this stage, none of the clone makers have licensed Mac OS 8, but announcements from several are expected at the Macworld Expo in Boston.

Through retail channels, Mac OS 8 costs \$149, and includes a coupon entitling owners of Mac OS 7.6 to a rebate of \$50. If you bought your Macintosh after the 1st of June, you can upgrade to Mac OS 8 for a mere \$19.95 through Claris Software Upgrades on 1800 028 316.

Mac OS 8 requires at least a 68040 processor and 16Mb of RAM, but a PowerPC and 32Mb of RAM is recommended. As always, more is better. Performance enhancements include a PowerPC-native Finder with multithreading, meaning that desktop-level functions, such as copying files and emptying the Trash, can take place simultaneously. Productivity improvements include "sticky" menus, "spring-loaded" folders and far greater integration with the Internet. Cosmetic enhancements include desktop pictures, allowing you to decorate the Finder with a single image, rather than tiling as in Mac OS 7.x, and new colour selection tools. For more details on new features in Mac OS 8, see the lead News item in last month's AMW.

## Fastest things since sliced bread

**POWER MAC  
8600/9600 AT  
UP TO 350MHZ**

Apple Computer has announced its new range of top-end Power Macintoshes, running on IBM's latest-generation PowerPC 604e processors. The Power Macintosh 8600 line will be accelerated to 250MHz, while the 9600 will offer processor speeds of 300 and 350MHz, both only in single processor models for the time being. Performance will also be increased by an Apple-designed 1Mb inline level 2 cache on its own 100MHz bus.

The increase in clock speed is made possible by improvements to IBM's CPU design. The new 604e uses .25-micron circuits in conjunction with advanced metal layers, allowing greater clock speeds with lower power consumption and less generation of heat.

Both machines will be available with a 24x CD-ROM and Zip drive, and the 8600 will ship with 32Mb of RAM while the 9600 will ship with 64Mb. Both will feature 4Gb hard disk drives. For the first time,

Apple will also sell a "VAR" version of the 9600/300, with no RAM and no hard disk, so that customers can customise it to their own tastes.

Apple Australia expects to have machines to sell by mid-September, but had not finalised pricing as this issue went to press. The 8600/250 is expected to be roughly the same price as the currently shipping 8600/200, while the 9600/300 will likely cost slightly more than the current 9600/200 and the 9600/350 should be approximately \$9000.





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40/2.4Gb/CD/TV/VI/28.8.....\$3995  
*Limited stock*

#### Macintosh 6500/300

300MHz 603e PowerPC processor  
Up to 128mb RAM  
12x CD ROM drive  
256k level 2 cache  
64/4Gb/CD .....\$4295  
With 15" Display .....\$4895

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#### PowerMac 7220/200

200MHz 603e PowerPC processor  
Up to 160mb RAM  
8x CD ROM drive, 2 PCI slots  
With 15" AV Display .....\$2745

#### PowerMac 7300/180

180MHz 604e PowerPC processor  
Up to 512mb RAM, 2-4mb VRAM  
12x CD ROM drive, 256k level 2 cache  
3 PCI slots, built in ethernet  
Processor upgradable, CPU .....\$3195  
With 15" AV Display .....\$3695

#### PowerMac 7300/200

200MHz 604e PowerPC processor  
Up to 512mb RAM, 2-4mb VRAM  
12x CD ROM drive, 256k level 2 cache  
3 PCI slots, built in ethernet  
Processor upgradable, CPU .....\$3895

#### PowerMac 7300/200 PC

200MHz 604e PowerPC processor  
Up to 512mb RAM, 2-4mb VRAM  
12x CD ROM drive, 256k level 2 cache  
Built in Pentium 166MHZ processor  
Built in ethernet  
Processor upgradable, CPU .....\$4795

#### PowerMac 8600/200

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1440 x 720 dpi black & colour.....\$520

#### Epson Colour Stylus 800

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### Laser Printers

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4ppm 600 dpi Post Script L2.....\$1350

#### Hewlett Packard 6MP

6ppm 600 dpi Post Script L2.....\$1595

#### Apple LaserWriter 12/640 PS

12ppm 640 dpi Post Script L2.....\$2575

#### Apple LaserWriter 16/600 PS

16ppm 600 dpi Post Script L2.....\$3615

#### GGC Elite XL 608

A3 600 dpi edge to edge printer  
8ppm Post Script L2.....\$4595

#### Apple Colour LaserWriter 12/660

12ppm 660 dpi Post Script L2.....\$8195

## Modems

Avtek 33.6kbps fax data voice.....\$199

Banksia Wave 33.6 voice.....\$295

Global Village Teleport geoport.....\$325

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Iomega Zip drive.....\$249

100mb Cartridges.....each \$25

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1Gb Cartridges.....each \$165

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Apple external 12x CD ROM.....\$495

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Prices at time of print. Please call for latest pricing

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16mb.....\$160

32mb.....\$320

64mb.....\$680

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8mb.....\$75

16mb.....\$160

32mb.....\$320

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Adobe PageMaker 6.5.....\$995

Adobe PageMill 2.0.....\$185

Adobe PhotoShop 4.0.....\$995

Adobe Streamline.....\$275

Quark Xpress.....\$1895

### Business & Utilities

ClarisWorks Office 4.0.....\$175

FileMaker Pro 3.0.....\$285

MacOS 7.6.....\$149

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RamDoubler.....\$119

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## Games

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## Workflows in Cyberspace

NEW PRODUCTS BRING YOUR SERVICE BUREAU TO THE DESKTOP

**M**acintosh users in the publishing business have long awaited the era of virtual manufacturing, a brave new world in which the service bureau and commercial printer become a seamless extension of your desktop. Thanks to a host of recently announced software products and telecommunications services, that promise is closer than ever to reality.

**OPENing Move** The technology to enable this vision first appeared in the OPEN workflow-management system from Luminous (<http://www.luminous.com>), which lets service bureaus create pipelines where incoming jobs are automatically inspected, trapped, imposed, colour-separated, and printed with or without the involvement of a prepress operator. OPEN is both a product and a plug-in architecture; any OPEN-compliant prepress application can be added to the automated pipeline.

A companion product, Luminous Virtual Network — formerly Adobe Virtual Network — lets your service bureau accept transmitted print jobs for automated processing through the pipeline. It has two components, a host program run at the service bureau and a client program that can be freely distributed to customers. Lumi-

nous offers a free generic version of the client on its Web site, but your service bureau can also generate customised client modules for distribution to customers.

**Choose your service** The customised client makes your service bureau appear as a Chooser-level output device. When you print the job, you fill out an electronic order form with instructions for handling

the file. The file is then automatically transmitted to the service bureau.

Group Logic (<http://www.grouplogic.com>), which developed the core technology in Luminous Virtual Network, has released its own version, called Mass Transit. The company also offers a remote document-viewing and annotation program called Imagexpo 2.0.

Tempus in a Teapot (<http://www.dka.com>) has developed an alternative to OPEN, called Tempus, that can handle native QuarkXPress and Adobe PageMaker files in addition to PostScript and PDF; OPEN is limited to the latter formats. Current Tempus-compliant software products include DK&A's InPosition and Trapper and EFI's Fiery Booklet Maker. DK&A is inviting other software developers to create Tempus-based products.

**High-speed pipelines** File-transfer software does you little good if you don't have a fast data pipeline. Fortunately, several vendors have introduced products and services targeted at the file-transmission requirements of graphics professionals.

MCI, British Telecom, and Scitex have announced the Digital Graphic Network service, which will permit high-speed file transfer among designers, advertising agencies, stock-photo houses, service bureaus, and printers.

MCI also sponsored development of an Adobe Photoshop plug-in called Genuine Fractals, from Alta-mira Group (<http://www.altamira-group.com>), that compresses scanned images into resolution-independent Fractal Image Files of 1Mb to 2Mb. Once transmitted, these files can be enlarged to between 400Mb and 500Mb — even if the original scan was only 10Mb to 25Mb.

Another company staking a claim for high-speed file transmission is 4-Sight (<http://www.4sight.com>), whose ISDN Manager software uses standard ISDN connections to transmit jobs to service bureaus.

Agfa is using ISDN Manager in a new service called PrintCast that lets you submit jobs to facilities that have installed its ChromaPress digital printing system.





# Microsoft puts IE 4 on the Mac

Microsoft has posted Preview Release 1 of the upcoming version 4.0 of Internet Explorer, and even this initial release has plenty of tasty new features sweetening the user interface and supporting new Internet technology.

The most obvious change is a new Explorer bar that runs down the left side of the browser window. On touching of one of four folder-like tabs (Search, History, Channel, and Favorites), the bar slides to the right, revealing a window where you can browse your favourite sites or surfing history, access Internet search engines, or click to content channels to which you've subscribed. Unlike the Windows release of IE 4, the Mac version will not come pre-populated with push channels, even though the same content works on either platform.

IE 4 for Mac will also not be as tightly integrated with the Finder as

the Windows version is with the desktop. This will not be a problem to anyone who upgrades to Mac OS 8, as the new OS features integrated Internet regardless of what browser you use.

Microsoft has also tweaked features previously introduced in Explorer 3.01. For instance the autocomplete feature — in addition to automatically completing a URL as you type it — now offers a pop-up menu populated with likely matches for your half-completed URL. The Subscriptions feature in Explorer 3.01 would notify you if it detected a change on a Web page that you set it to monitor. Explorer 4.0 will automatically download and cache a page if it detects changes; you can also break your Internet connection and browse cached pages offline.

The preview release of Internet Explorer 4 for Mac OS is available from <http://www.microsoft.com/ie/mac>

## Apple's vision for digital workflow

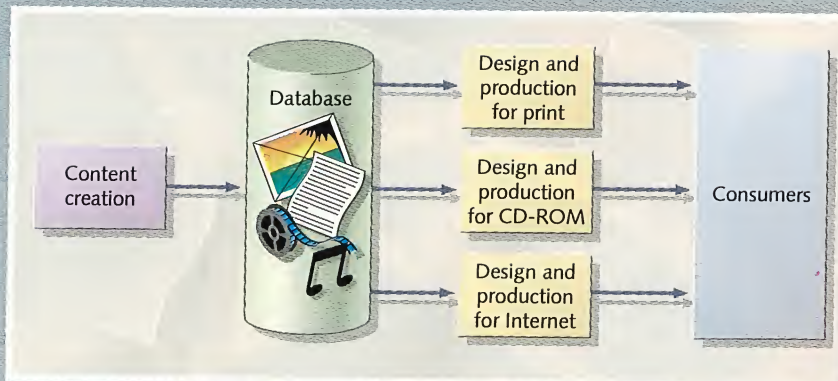
As vendors like Luminous and Group Logic strive to reduce the barriers between service bureaus and their customers, Apple is promoting its own vision of a digital-media workflow. Apple's former executive vice president, Ellen Hancock, recently presented a new model for media production that accommodates CD-ROM and Web authoring as well as traditional print media.

The current model, she said, is driven by print production: at a certain point in a print project, a designer adapts existing text and graphic elements for the Web or CD-ROM. Under the new model, all elements used in print and new media are stored as objects in a central media database, from which various forms of print and online content can be generated in parallel. In addition to permitting the reuse of appropriate media elements, she said, the model is better suited to the immediacy of online communications, because production is not dependent on the print workflow.

What is Apple's stake in this? Chris Gulker, Apple's business development manager for publishing, entertainment, and

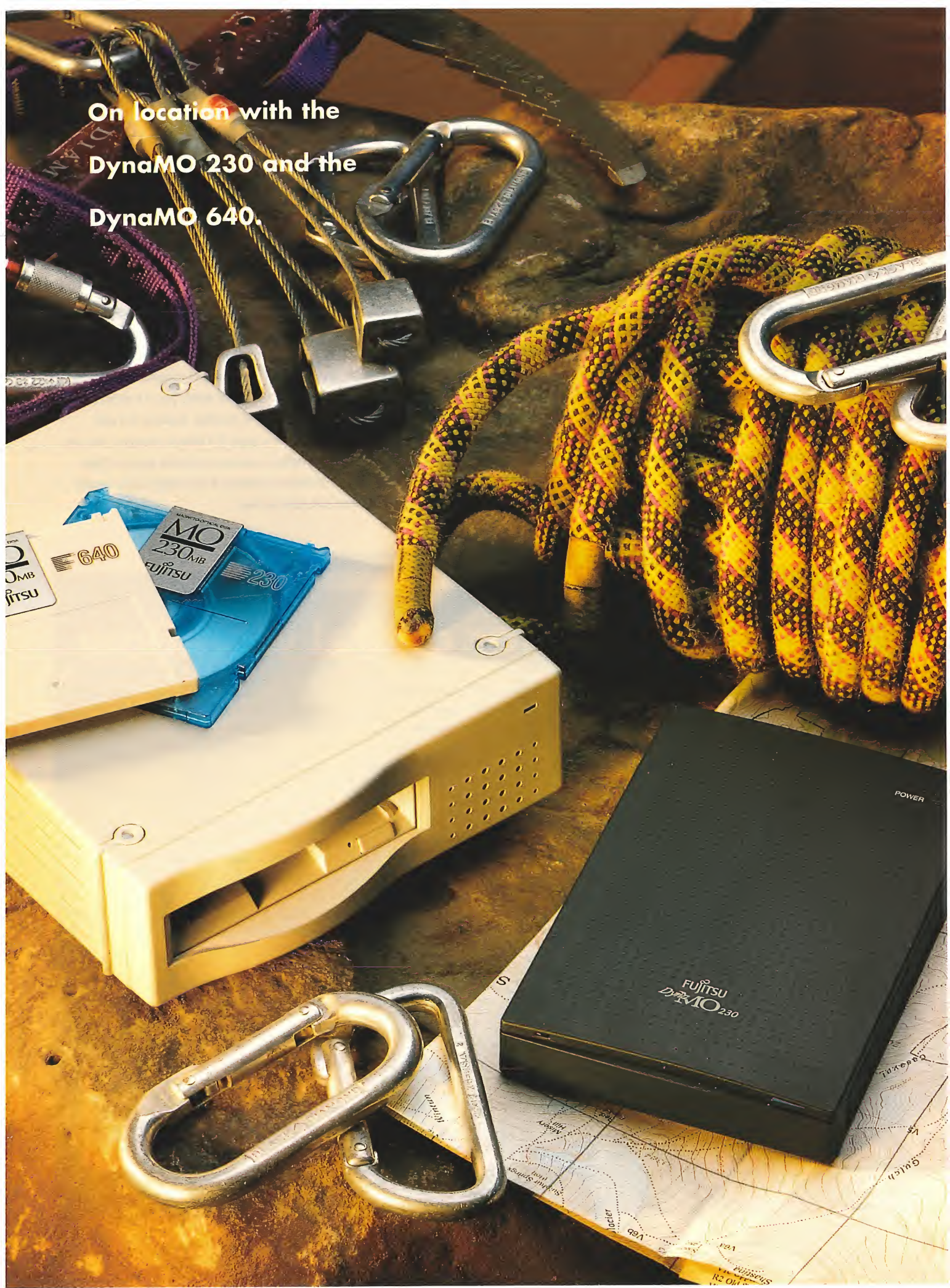
new media, says that WebObjects, the sophisticated Web authoring software that Apple obtained as part of the NeXT acquisition, is the glue that will enable databases and other software components to work within this new-media-production model. The software currently runs under Windows NT and Unix, but Apple promises a Mac OS version by the end of the year. The current price tag is \$US5000; however, Gulker says the price is likely to drop as Apple targets the software at a broader market.

Gulker admits that the new workflow model is geared toward the largest publishing operations — companies like Time Warner and R.R. Donnelley & Sons that manage huge volumes of information. And support for the model is far from unanimous. On hand for Hancock's presentation at Seybold New York, Quark chairman Tim Gill argued that the needs of electronic and print media are so different that few elements can be reused in the manner suggested by Apple's proposal.





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## QTVR gets ready for prime time

NEW AUTHORIZING TOOLS INTRODUCED

Apple's QuickTime VR (QTVR) technology, until recently the province of a few pioneering multimedia developers, is stepping into the limelight. PictureWorks (<http://www.pictureworks.com>), Live Picture (<http://www.livepicture.com>), and Panimation (<http://www.panimation.com>) has introduced inexpensive software packages that make it easier to create QTVR panoramas. Thanks to a new application programming interface (API) in QTVR 2.0, developers of graphics software can add QTVR authoring capabilities with minimal hassle. Still, Apple can't rest on its QTVR laurels because several competing technologies have emerged.

A QTVR panorama gives you the illusion of being in the centre of a virtual environment; scrolling with the mouse or cursor keys offers a 360-degree view of the scene. To create the panoramas, you shoot a series of photographs from the centre of the environment you want to replicate; you can also create panoramas consisting entirely of computer-generated images. Either way, you need a QTVR authoring tool to stitch the individual images into the full panorama and save it in QTVR format. Panoramas can also include object movies that let you view objects from different sides.

**NEW SOFTWARE** Apple offers free software that converts panoramic PICT images created in other programs into QTVR movies. However, creating the panoramas themselves is a time-consuming task. The new authoring programs — PictureWorks' \$100 Spin Panorama, Live Picture's \$100 PhotoVista, and Panimation's \$169 Nodester — make it much easier to stitch the images into QTVR movies or panoramic stills saved in PICT or JPEG formats. With their simple inter-



Be Here's Portal S1 can capture a complete QTVR panorama in one shot

faces and low price tags, they promise to bring QTVR authoring capabilities to a much broader market. They are especially useful in conjunction with digital cameras.

With each product, you begin by taking a series of photographs, rotating the camera clockwise so that each shot slightly overlaps the previous one. You then import these images in sequence to create the panorama. Spin provides tools that simplify the stitching process: after you identify common reference points in adjacent images, the program causes these points to overlap, binding the right side of one image to the left side of the next. PhotoVista and Nodester automate this process, aligning and stitching the images with a single command. You also have the option of manually fine-tuning the stitch. All three programs include blending functions that minimise lighting differences between adjacent photos. However, none can produce an object movie.

Nodester includes a simple built-in image editor, allowing you to perform basic image enhancements without using a separate program. A rapid-fire mode lets you capture a series of images using a digital camera tethered to the computer; the software then

automatically composes the images into a complete panorama.

Spin and Nodester support QTVR only. PhotoVista supports QTVR plus Live Picture's own RealVR format, which was developed by Eric Chen, a member of the original QTVR programming team. Live Picture is currently working on an enhanced version of PhotoVista, to be introduced later this year, that will allow designers to add a variety of media elements to the panoramas, including FlashPix images.

Competing formats RealVR is one of several technologies that have emerged to compete with QTVR. Its major advantage is file size: a RealVR panorama generally consumes much less data than the equivalent QTVR movie. The format consists of a JPEG image packaged within a VRML file; to view the panoramas you need to download a VRML extension from the Live Picture Web site.

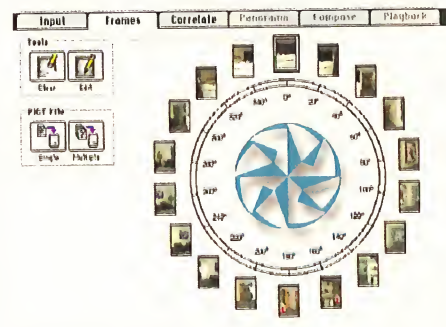
Other QTVR competitors include Ipix from Interactive Pictures (<http://www.ipix.com>), and Tornado from NetVR (<http://www.netvr.com>). Interactive Pictures (formerly OmniView) offers Mac-based authoring and viewing software, including a Macromedia Director Xtra, but instead of paying for a standard software licence, you pay for each completed movie, at a

price depending on the quantity you produce. You can capture a complete panorama with two shots from a camera equipped with a fish-eye lens. In addition, images are mapped to the inside of a virtual sphere — rather than QTVR's virtual

cylinder — meaning that you can look all the way up and down in addition to left and right.

NetVR's Tornado is based on Java, so you don't need special plug-ins to view the content. Currently, Tornado generates in-line 3D objects — equivalent to QTVR's object movies — but the company is also developing a panoramic movie component. The pricing is similar to Interactive Pictures' — you pay a sliding fee for each object you create.

Panoramic camera Be Here, which introduced its Portal S1 Panoramic Capture System at the 1997 Macworld Expo in San Francisco, has reduced its original \$US15,000 asking price to \$US9995. However, it's another metered system: the base price buys you the right to make 100 images; after that, you pay \$US4 to \$US5 per saved image depending on volume. The advantage of the Portal S1 is that it can capture an entire 360-degree panorama in a single shot. This lets you create



Panimation's Nodester makes it easier to create QuickTime VR panoramas

scenes with people and other moving elements that would be impossible to produce with other cameras. At this stage the Portal S1 has no Australian distributor, but we understand that negotiations are under way.



# Product

update



## Canon shoots from the hip

Sporting a compact form factor, the PowerShot 350 digital camera from Canon includes a number of features at a reasonable price. The camera includes a 2Mb removable Compact Flash memory card and captures images at 640 x 480 pixels. The 2Mb card allows up to 47 images (with JPEG compression) to be stored. 4Mb and 15Mb versions of the Compact Flash card will also be available from Canon. The PowerShot 350 has a built-in LCD screen which can preview photos before they are taken or display images from the memory card. A video-out port is included with the camera which allows it to be connected to a television and the built-in flash incorporates red-eye reduction. The camera comes bundled with TWAIN drivers for the Macintosh and PhotoImpact 3.01SE photo-editing software. The PowerShot 350 will empty \$899 from your wallet and more information is available from Canon (02) 9805 2000.

## The return of Blinky

The irrepressible koala is back in his second CD-ROM adventure with a third to follow. Based once again on an episode from the highly successful TV series, Blinky Bill's Extraordinary Balloon Adventure (\$59.95) takes Blinky and his friends on an international trip where they discover interesting creatures from other countries. No installation is needed — this is one of the few discs that uses QuickTime's AutoPlay feature — while high-quality animation, ease of use, and terrific music make this an Australian winner. Tacked on to the interactive storybook are lots of educational games, which although initially appealing to three to six

year olds may have limited repeat value. Blinky Bill also has his own Web site, accessible via an HTML file on the CD-ROM or directly at <http://www.blinky-bill.village.com.au>. Contact Roadshow Interactive on (02) 9552 8700.



## Get a studio on your back

Providing a way to use a standard medium format camera for digital photography, Phase One offers the StudioKit camera back. Available in configurations for Hasselblad, Mamiya, Bronica, Fuji and Rollei medium format cameras, the StudioKit has a 56mm x 56mm capture area that produces images with 3500 x 3500 pixels (uninterpolated). Images are taken in 36-bit colour and the camera



back has an effective film speed of ISO 400. Phase One utilises Flicker Suppression technology to allow the camera to be used with low-wattage tungsten lights. Bundled with the unit is Phase One's own capture software which is capable of several functions including on-the-fly unsharp masks, CMYK separations, rotation and cropping, as well as colour correction. Priced at \$16,500, Phase One's StudioKit is available through Australia Multicomm on (03) 9500 9907.



### Epson's imaging onslaught continues

Scanning your snaps is a snap with Epson's consumer-oriented 30-bit film scanner. The FilmScan 200 scans directly from 35mm transparencies or negatives at a resolution of 1200dpi and is capable of 4800dpi output. Included with the scanner is a film carrier which allows batch scanning of up to six images. The FilmScan also supports the Advanced Photo System (APS) and comes bundled with PictureWorks's PhotoEnhancer, Adobe PhotoDeluxe and Presto! PhotoAlbum for image editing and display.

Epson's imaging assault is not restricted to the consumer market. The Stylus Color 3000 is an edge-to-edge A2 colour inkjet printer that is capable of 1440dpi x 720dpi resolution. Targeted at desktop publishers, prepress graphic designers and CAD/CAM users, the Stylus Color 3000 uses a long-life printhead technology called Micro Piezo which also helps to provide faster output. The printer is able to print anything up to 410mm wide and supports a number of media such as backlit film, canvas cloth and banner paper up to

several metres long. An optional Ethernet card is available.

The Epson FilmScan 200 is priced at \$999, while the Stylus Color 3000 comes in at \$3500.



#### ... But wait, there's more

Just when you thought you'd heard all there was to hear, Epson decides to release even more products. Targeted at the work-

group environment, the EPL laser printers are designed to be a necessary addition to your network. The EPL-N1200 is capable of printing 12 pages per minute (ppm) at 600dpi x 600dpi resolution and incorporates three paper trays, allowing a storage capacity of 1250 A4 sheets. The system is able to use media of various sizes (including envelope and A6) and comes with 2Mb of RAM which can be upgraded to 64Mb. An optional Ethernet card is required/can be added to the system which fully supports AppleTalk and TCP/IP protocols. The EPL-N2000 is the A3 version of the EPL range and already

comes Ethernet ready. The printer prints up to 20ppm for A4 sized paper or 11ppm for A3 and prints at 600dpi x 600dpi. A standard configuration includes 4Mb of RAM (upgradable to 68Mb) and has a paper capacity of 500 A4 sheets (expandable to 1000) and 150 A3 sheets (expandable to 400). The printer also supports double-sided printing with its optional duplex unit. The EPL-N1200 will hit your pocket for \$2199 while the EPL-N2000 will cost you \$3999.

#### ... Wait for it

Not content to sit on its laurels, Epson is offering a significant price reduction on its range of LCD multimedia projectors. The top of the line EMP-5000, which is capable of display resolutions up to 800 x 600 pixels on a diagonal screen size up to 7.6 metres and comes with its own stereo sound system, is now priced at \$12,600. The EMP-3500 and EMP-3300, which offer 640 x 480 resolutions, have been reduced in price to \$9200 and \$7400 respectively. More details are available from Epson on (02) 9903 9000.



### This can't go any faster, can it?

Just when you thought they couldn't get any faster, Plextor is out to prove that there's no speed limit on CD-ROMs. The Plextor 12/20PleX CD-ROM drive is capable of data transfers up to 3Mb/sec which is roughly five times faster than quad-speed drives. The drive also includes a 512K buffer which helps to provide playback of full motion video straight from CDs and a brushless motor ensures higher reliability and longer working life. Priced at \$375, the 12/20PleX internal drive is available through SCSI Corp on (02) 9894 6033.

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### Shout it from the rooftops

Bringing 3D acceleration to the consumer market, ATI Technologies introduces its XCLAIM range of PCI-based graphics cards to Australia. The XCLAIM VR offers QuickDraw 3D RAVE support as well as QuickTime acceleration and Mac2TV allows you to output computer images to TV. Just when you thought you couldn't fit any more features onto the card, it also allows video capture at 320 x 240 pixels at up to 30 frames per second. The XCLAIM VR comes in a 2Mb SGRAM configuration (which supports millions of colours up to 832 x 624) and a 4Mb SGRAM version (allowing 1152 x 870 resolution with millions of colours). As well as a standard DB-15 monitor port, the card includes video-in and video-out as well as S-Video-in and S-Video-out connectors. A future option for the XCLAIM VR, called XCLAIM TV, will allow users to use their graphics card as a TV tuner as well. The XCLAIM 3D card is geared more towards the graphics professional and provides the same QuickDraw 3D and QuickTime acceleration that the XCLAIM VR does. However, the XCLAIM 3D utilises a 3D memory management utility and comes in a 4Mb SGRAM and 8Mb SGRAM configuration. The 4Mb version allows up to 1152 x 870 resolution and the 8Mb version allows up to 1600 x 1200 resolution, both in millions of colours. The XCLAIM VR is priced at \$499 for the 2Mb version and \$659 for the 4Mb version, and the XCLAIM 3D costs \$519 for the 4Mb card and \$709 for the 8Mb card. Further details can be obtained through BBF Components and Peripherals on (02) 9630 0941 or (03) 9761 4299.



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## APPLE'S NEW OFFERINGS

### How about a serving of data

Putting more raw horsepower into its server lineup, Apple has introduced the 7350/180 and 9650/233 Workgroup Servers. The 7350/180 is enclosed in a desktop case (similar to the 7300 model) which includes 48Mb of RAM (expandable to 512Mb), a 4Gb hard drive, three PCI slots, and a 180MHz PowerPC 604e with a 256K Level 2 cache. Rounding out the top end of the Workgroup Server line is the 9650/233, which is based around the 9600 design. A standard configuration includes 64Mb of RAM (expandable to 768Mb), a 4Gb Ultra/Wide SCSI drive, six PCI slots and a 233MHz PowerPC 604e with a 512K Level 2 cache. Three SCSI channels are integrated into the system: one internal Ultra/Wide SCSI-3, one internal Fast SCSI-2 and one external SCSI-1. Both systems come with 10Base-T Ethernet, a 12x CD-ROM drive, Apple RAID software for disk striping (RAID 0) and mirroring (RAID 1), as well as Apple's Applications Server Solution and AppleShare Server Solution software. The Workgroup Server 7350/180 will require you to fork out \$4995, while the 9650/233 will cost you \$9995. The Apple Internet Server Solution software can be bundled with either of these machines for an additional \$500.

### ...Would you like some PC with that?

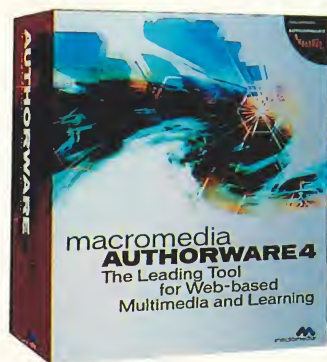
Everyone except the terribly uninformed knows that a Mac can open and save PC files and use them as if they were Mac files. For those unfortunates who have to go a step further and use PC applications, Apple offers the 7220 and 7300 PC Compatible machines. Based on the existing 7220 (200MHz 603e) and 7300 (180MHz and 200MHz 604e) models, these machines incorporate PC Compatibility Cards which take up one of their PCI slots. The card has a 166MHz Pentium processor with a 256K Level 2 cache and 16Mb of RAM (expandable to 80Mb). Both systems come with 32Mb of RAM and a 12x CD-ROM and two free PCI slots. Pricing starts at \$3495 for the 7220 PC Compatible, while the 7300/180 PC Compatible costs \$4495 and the 7300/200 PC Compatible comes in at \$5295.

### It came in a vision

Supplanting the venerable Multiple Scan 20, Apple offers the AppleVision 850 display as its monitor for the professional market. Designed for desktop publishers and high-end graphic artists, the monitor comes with a 19in diagonal viewing area and is capable of displaying resolutions up to 1200 x 1600



pixels. The AppleVision 850 utilises a Triniton tube and includes Apple's DigitalColor and ColorSync 2.0 technology to provide accurate colour matching with printed output. Elements such as resolution and colour temperature are controllable through software that integrates with the Monitors and Sound control panel. An ADB port is incorporated into the swivel base and the monitor complies with TCO 92 environmental recommendations for emissions. The AppleVision 850 is priced at \$3400.



### Author, Author

Boasting a more flexible approach to interactive applications, Macromedia presents version 4 of its Internet/intranet development tool Authorware. Among Authorware's new features is comprehensive Shockwave integration which enables developers to create applications which

support both Shockwave Director and Audio files. Separating content from an application has also been made possible thanks to the introduction of External Content Linking. This feature allows an application to make reference to an external media link. By doing so, items can be updated regularly without having to update the application itself. A Media Browser is incorporated into Authorware so that media elements can be easily located and referenced. Authorware also supports full binary compatibility which enables users to produce a single file that will run both on Windows PCs and Macs. The Authorware 4 Interactive Studio incorporates Director 6.0, Backstage Internet Studio 2.0 (Enterprise Edition), Macromedia xRes 3.0 and SoundEdit 16 2.2. The suite includes an enhanced user

interface which is consistent across all applications. The stand-alone version of Authorware 4.0 costs \$3145, while the full studio is priced at \$3895. Further details are available from the fine people at Firmware Design on (047) 217 211.

### Let me take you down

The portable storage gurus at Iomega are making it easier to carry around a gigabyte of data by reducing the price of their Jaz drives. The internal model is now priced at \$599 (down from \$749) and the external drive is priced at \$799 (down from \$899). Iomega recently reported that, during its two years of operation, it had sold over seven million Zip drives, two million Jaz drives and a million Ditto tape drives. More details are available from Iomega on (02) 9461 0601.



### **Doin' it with style**

If you're looking to brighten your world, the new series of Color StyleWriter inkjet printers from Apple may fill your colourful needs. The Color StyleWriter 4100 is Apple's entry-level printer and is capable of printing up to four pages per minute (ppm) in 600dpi x 600dpi black and white. In colour, the 4100 reaches up to 600dpi x 300dpi and prints at 1.5ppm. Various media are accommodated, such as transparencies, envelopes as well as cards and the system incorporates a dual ink system so that the colour cartridge is separate from the black ink.



On the next step up, the Color StyleWriter 4500 joins the bandwagon of "photorealistic" printers that have swamped the market. Similar in resolution to the 4100, the 4500 prints black

and white at 5ppm and colour at 1.7ppm. What differentiates it from the 4100 is its use of 6 different inks to produce a wider range of colours for realistic output. As well as the standard cyan, magenta, yellow and black inks, the printer includes a light cyan and light magenta ink capacity. The photograde colours (light cyan and light magenta) are added in separately allowing you to use them only when needed. Both the 4100 and 4500 have paper capacity of 100 A4 sheets, 50 transparencies and 30 cards.

Rounding out the new series is the Color StyleWriter 6500, which offers faster printing (8ppm for 600dpi x 600dpi black and white, 4ppm for 600dpi x 300dpi colour) and a slightly larger paper capacity (150 A4 sheets). The 6500 comes with larger capacity ink tanks for extended use before replacing inks. Also included with the 6500 is a parallel port for connecting the printer to your PC brethren.

The Color StyleWriters are priced at \$425 for the 4100, \$645 for the 4500 and \$995 for the 6500. With the addition of the optional \$395 EtherTalk Adapter II, any one of these printers can be used with an Ethernet network.

Further details on any of Apple's products can be had from the cheery folks at Apple Australia on 1800 025 355.

### **It ain't heavy**

Adding to the torrent of new printers this month, Brother presents an inexpensive option for the SOHO market. The HL-1060 is a 1200dpi x 600dpi laser printer which is capable of printing up to 10ppm. The system comes with two trays providing a paper capacity of up to 400 A4 sheets. Paper stock between 60gsm and 158gsm can be accommodated and the printer uses Brother's Straight Paper Path technology to prevent paper jams and curls. A standard 2Mb of memory can be upgraded to 32Mb; however, in order for it to work on your Mac, you'll require an optional \$129 Mac interface. Otherwise, the HL-1060 laser printer costs \$1099 and more information is available from Brother on (02) 9887 4344.



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# connect your

BY MEL BECKMAN AND ELIZABETH DOUGHERTY

## What you need to know to set up a small Ethernet network

**If you're like many Macintosh users in small business these days, your computer count is growing. There's the Main Mac, your 200MHz PowerPC pride and joy (strictly for work, of course); your partner's Main Mac 2; the Auxiliary Mac for the occasional temp; plus a PowerBook or two; and you're contemplating a Web server.**

**Y**ou can save time and money by connecting this collection, along with your peripherals, with an Ethernet network, which will let you easily share files and resources such as printers and an Internet connection. You might think a local area network (LAN) is only for big companies, but you can reap the advantages, too, if you're willing to spend a little time and money.

While the Mac's built-in LocalTalk connection makes it easy to connect devices, its 230.4Kbit/sec (0.23Mbit/sec) transmission speed pales next to Ethernet's 10Mbit/sec

(or even 100Mbit/sec, if you want to invest the funds). Both the cost and the complexity of putting together an Ethernet network have been reduced so much that the benefits far outweigh the short-term expense.

In this hands-on guide, you learn what you need to construct your own Ethernet network: the parts, how they interrelate, how to avoid problems, and how much it costs. You can put together an Ethernet network for a handful of machines for under \$300. For most people, the 10Base-T type of Ethernet is the best to use, since it's easy to install and troubleshoot and uses the most prevalent wiring type.

With this article in hand, you will be able to sort through the dizzying array of network equipment (see the sidebar, "Picturing your equipment options") in computer stores and zero in on exactly what you need to start enjoying the benefits of being connected.

### First, the Mac connection

To attach a device to an Ethernet network, the device needs an Ethernet connector — either built in or via add-on hardware — into which you can plug the network cable. Here's what you need to know about the different kinds of connectors (to see what these look like, see the diagram "First, determine the right connection").

**BUILT-IN 10BASE-T** If you bought your

Mac in 1995 or later, it may have Ethernet built in, in the form of a 10Base-T connector, which looks like an overgrown telephone jack (it has eight conductors instead of four). This is the best kind of connection because it connects directly to a 10Base-T cable without any extra hardware.

**BUILT-IN AAUI** Many Macs, especially older ones, have a connector type called AAUI (Apple Attachment Unit Interface). This requires a hardware adapter called a 10Base-T transceiver (about \$100 to \$200), a tiny box with a 10Base-T connector for the network cable and its own cable that connects to the Mac's AAUI port. You don't need any additional software.

**ADD-ON CARD** If your Mac doesn't have a 10Base-T or AAUI connector but has an expansion slot, you can add a 10Base-T connector via an internal card. Ethernet cards come in several varieties, including NuBus, PCI, Apple Communications Slot, PC Card, and LC (for the PDS slot).

You install the card just as you would any add-on card: following the instructions included with the card, you open your Mac, locate the card slot, insert the card, and button everything back up. Unlike the way it is in the PC world, there are no jumpers or switches to set on Mac cards — just plug and play.

Cards might require you to install driver software — read the documentation for requirements and check the vendor's Web site for the latest version.

Ethernet cards are commodities, costing as little as \$125 to \$175 (see the table, "Comparison shopping for your Ethernet network"). Buy your cards from a reputable manufacturer — such as Asanté Technologies, Dayna Communications, or Farallon Communications — that offers a warranty and good technical support.



# workgroup

**EXTERNAL SCSI ADAPTER** For Macs without expansion slots, such as older PowerBooks, or when expansion slots are already filled, you need an external SCSI 10Base-T Ethernet adapter. The vendor will include any software you need. SCSI Ethernet adapters are expensive, around \$400.

## Second, the right cable

Whatever type of connector you have — a port in the back of your Mac, a transceiver, an add-on card, or a SCSI adapter — the goal is to get a place to plug in a 10Base-T cable, also called unshielded twisted-pair (UTP). You may hear about thick and thin Ethernet; avoid these obsolete technologies.

Here's what you need to know about buying cable.

**SPEED RATING** You want Category 5 cabling, the fastest possible (the scale is 1 to 5). The price difference between categories is not large, so don't consider buying anything less than Category 5. Look for the Category 5 or CAT-5 designation printed every metre or so on the wiring's outer insulation. Another benefit to using Category 5 cable is that it will accommodate faster network speeds, including 100Mbit/sec.

**LENGTH** Measure your work area, and buy terminated cable lengths that match the distances between devices as closely as possible. Keep in mind that Ethernet has distance limitations — practically, a maximum of 90 metres.

**STRAIGHT THROUGH VERSUS CROSSOVER** 10Base-T cables come wired straight through or crossover. You'll usually use straight-through cable; crossover cables are for special cases, such as connecting two devices directly.

To distinguish between types, hold the transparent connectors from both ends of the cable side by side with the same orientation. In a straight-through cable, wire





colours inside the connectors match left to right; in a crossover cable, the colour sequence differs.

### Third, the hub

In a 10Base-T network, you connect one end of the cable to the device and the other end into a hardware piece called a hub (also called a repeater). Just as the hub of a wheel connects all the spokes, a network hub connects all the devices of the LAN in what's called a star topology. In contrast, LocalTalk devices link sequentially, in a daisy chain.

The hub adds some expense (about \$300 to \$400 for eight ports) but connects multiple devices, regenerates data signals to improve reliability, and simplifies troubleshooting by isolating a failing device to prevent the whole network from crashing.

Here's what you need to know about buying a hub.

**CHOOSE UNMANAGED** Of the two kinds of hubs — unmanaged and managed — you want unmanaged; managed hubs are expensive and have remote-control capabilities you don't need in a small LAN. Count the devices you want on your network and add two for growth — that's the minimum number of ports you need.

Common 10Base-T small-hub configurations have five or eight ports. There's not a big price difference, so don't scrimp — networks usually grow rather than shrink. Expect to pay between \$30 and \$50 per port. Make sure you count 10Base-T ports; one port is sometimes for connecting another

hub or different cabling type.

**DECIPHER THE LIGHTS** You'll want to know a little bit about troubleshooting, but the information that hubs provide can make it as easy as it is to check Print Monitor when you have a printing problem.

Every hub has status lights indicating whether a port is connected properly and when data is moving to the port. Other lights show if there's too much traffic or a failed device.

I find it easiest to monitor a hub that has the connectors and status lights on the same side of the box. However, you might want to have the cables on the back of the hub so they're out of the way. Just make sure you can easily see the lights to check for trouble.

As with cards and cabling, buy a hub from a reputable manufacturer that stands behind its warranty with good technical support. Online resources are key for getting quick help, so check out a vendor's Web site for online documentation, tutorials, and troubleshooting aids.

**BRIDGE TO LOCALTALK** If you have LocalTalk devices, such as printers, that don't have an Ethernet connection, you can use a LocalTalk-to-Ethernet converter (some are just for printers), costing \$350 to \$400.

If you need to connect to LocalTalk Macs, you need a device called a bridge. However, a bridge is expensive, about \$500. You can also use Apple's free LaserWriter Bridge or \$111 LocalTalk Bridge software to turn a Mac into a LocalTalk converter or bridge, respectively. Remember that

LocalTalk devices connected to an Ethernet network this way are still limited to LocalTalk's slow speed.

### A hubless alternative

If you're converting an existing LocalTalk network to Ethernet, or if centralised hub wiring is inconvenient, you might consider Farallon's hubless 10Base-T architecture called EtherWave, which uses 10Base-T cabling and proprietary adapter cards and transceivers (each with two 10Base-T jacks). EtherWave lets you daisy-chain up to eight devices LocalTalk-style.

EtherWave transceivers and adapter cards cost about twice as much as their hub counterparts. If you have AAUI-equipped Macs and need to buy transceivers anyway, the extra cost for EtherWave transceivers may be offset by the money you save not buying a hub. If you have some AAUI-equipped Macs, you can use EtherWave for those, but you'll still need a hub for Macs with only 10Base-T connectors. You can connect an EtherWave daisy chain to a 10Base-T hub.

Do the maths. Generally, a hub is the cheaper option for Macs with 10Base-T built in, since two EtherWave transceivers cost more than a hub and two transceivers.

### The software side

As long as you've installed any required drivers for adapter cards, System 7.5 and above has all the software you need for common networking tasks.

**TRANSPORT PROTOCOLS** The Mac OS

## Comparison shopping for your Ethernet network

Company	Distributor	Phone	10BaseT Cards						
			PCI	NuBus	LC	CommSlot	CommSlot II	PC Card	Other Form Factors
Apple Computer	Apple Australia	1800 025 355	•	•	160	175	175	•	•
Asanté Technologies	Mitsui Computer	(02) 9935 2400	\$376 <sup>c</sup>	\$520 <sup>c</sup>	•	•	•	•	•
Dayna Communications	CoNeXuS	(02) 9975 2799	121	195	168	153	•	342	IIsl-SE, SE/30, or SE, \$336
Farallon Communications	Lidcam Technologies	(03) 9820 9077							
EtherMac product line			159	178	162	159	•	247 <sup>o</sup>	PowerBook 1400, \$271 SE/30-IIsl or SE, \$235
EtherWave product line			222	330	330	229	•	367 <sup>o</sup>	•
Sonic Systems	Mitsui Computer	(02) 9935 2400	151	123	123	131	159	240	SE/SE30, \$240

• = none. All prices are company's estimated prices. <sup>a</sup> \$111 software. <sup>b</sup> Printers only. <sup>c</sup> Includes 100BaseT <sup>o</sup> For a PowerBook



includes transport protocols, the software needed to move data over a network. The protocols you care about are AppleTalk and TCP/IP (which the Internet uses).

You should use Apple's current network architecture, called Open Transport (version 1.1.2 at this writing), which installs automatically with System 7.5 and is mandatory with System 7.6. Under System 7.5, you may have to enable Open Transport by running the Network Software Selector, found in the Apple Extras folder. (Apple has announced that it will maintain but not further develop Open Transport; instead it will use the Open-Step networking architecture in the new Rhapsody OS expected in mid-1998. However, that's not something to worry about right now.)

**FILE SHARING** The Mac OS includes Personal File Sharing, which lets network users share data on hard drives in what's called peer-to-peer networking. For centralised file sharing, AppleShare server software, an extra-cost item, is necessary. You likely won't need AppleShare to accommodate data-sharing needs on a small LAN.

### Connect and test

Once you've connected all the hardware together, take the time to make sure every device can communicate with every other device and measure network throughput by timing how long it takes to copy files between Macs using Personal File Sharing.

Keep in mind that although 10Base-T theoretically transfers data at 10Mbit/sec,

due to overhead you can only achieve about 60 per cent of this speed. Data rates of 6Mbit/sec are very good on fast Macs, and 4Mbit/sec may be perfectly acceptable. Keep a record of your baseline network performance so you'll have a comparison point if you have trouble later.

The symptoms of problems can be as obvious as a nonfunctional network or as subtle as reduced performance or intermit-

tent failures. Most protocols that run over Ethernet have built-in error detection and correction, and they will forge on in the face of severe transmission problems.

**MAKE A DIAGNOSIS** The status lights on the hub, adapter cards, and transceivers will help you diagnose a problem if trouble occurs.

- The link status light indicates that there's a proper electrical connection between a device and the hub in a hub-based network or between two devices in a hubless network. If this light is off, try replacing the cable; make sure you have the right type (straight through or crossover).
- The traffic light, sometimes labelled Activity or LAN, blinks when traffic is flowing. Better-quality devices have separate transmit and receive indicators (called TX and RX, respectively) to indicate the traffic direction. If you have a link indication but no traffic indications, suspect software misconfiguration or a failed hub, transceiver, or adapter card. Try swapping cables, then changing ports on the hub, to isolate the problem.
- The collision light blinks when there's too much traffic for the LAN to



### Picturing your equipment options

**[A]** A **HUB**, such as Dayna's MiniHub-5, serves as a central connection point for devices on a 10Base-T network. The lights give you information such as whether a port is connected properly and when data is moving to the port. ••• You use 10Base-T cable to connect your Mac to the hub. If your Mac doesn't have a built-in 10Base-T connector, you can add one using hardware such as **[B]** an **ADD-ON CARD**, like Asanté's PCI card, or **[C]** an **AAUI TRANSCEIVER**. ••• **[D]** Farallon's **ETHERWAVE**, a hubless alternative, uses 10Base-T cabling and proprietary adapter cards and transceivers (each with two 10Base-T jacks, pictured). EtherWave lets you daisy-chain up to eight devices.

AAUI Transceivers	SCSI-to-Ethernet Adapter		LocalTalk-to-Ethernet Adapters	Hubs
	Desktop	PowerBook		
194	•	•	A	5/\$195
135	•	•	•	8/\$244; 12/\$445
67	506	•	8/\$640	5/\$189; 8/\$275
65	•	•	1°/\$394; 1°/\$456; 8°/\$659	4/\$194; 8/\$241
194	•	•	1°/\$494 ; 1°/\$582; 8°/\$559	•
110	349	397	2°/\$498 ; 12°/\$501 or \$835	9/\$293; 8/\$517



## First Determine the Right Connection

Whether you have a built-in port or need extra hardware — a transceiver or a card — to connect to a 10Base-T Ethernet network depends on the vintage of your Mac. Tip: to see if your Mac has a 10Base-T or AAUI port, look for the Ethernet connector symbol <—>. Here's what the three options look like



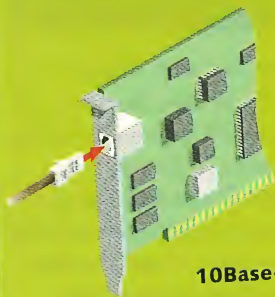
10Base-T port



AAUI port



10Base-T transceiver



10Base-T PCI Card

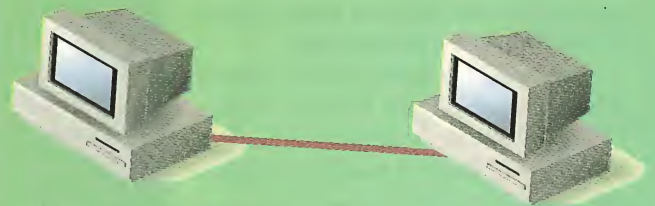
**Built-in Ethernet** If your computer has a 10Base-T (also called RJ-45) port, you're ready to go — all you need is a 10Base-T cable

**AAUI Connection** If your computer has an AAUI port, you need a 10Base-T transceiver; you can use either a standard transceiver, which requires a crossover cable or a hub, or Farallon's EtherWave transceiver

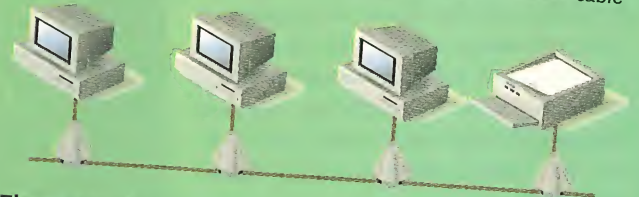
**Add-in Card Required** If your computer has no network port, you need an internal PCI (shown), NuBus, or Communications Slot Ethernet card or an external SCSI-to-Ethernet converter

## Next, Pick the Best Configuration

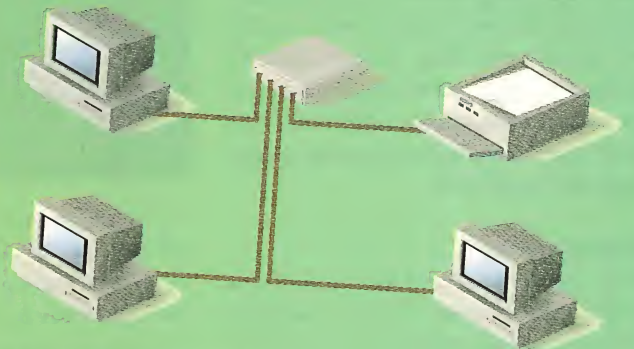
How you configure your network depends mainly on how many devices you have (and how many you plan to add) as well as their location



**The Simplest Network** Connecting two Macs, or a Mac and a peripheral such as a printer, requires only a single crossover cable



**The Daisy-Chain Option** With Farallon's EtherWave, devices connect one to another in a daisy chain, rather than to a hub



**Hub-Centric Approach** A 10Base-T hub connects more than two devices in a star topology. Use straight-through cables

handle. A few collisions per minute are normal — these result when two computers try to transmit at the same time. Frequent (every few seconds) or continuous collisions may indicate wiring problems, such as damaged cables or corroded connectors. Try simplifying your network configuration to just two devices and the hub to isolate the problem component.

- The jabber light indicates that a device is transmitting noise onto the network. Jabber occurs when a device malfunctions and usually indicates that the device's Ethernet transceiver or card has failed. You can manually locate the failing device by disconnecting ports one at a time at the hub. When the

jabber light goes out after you disconnect a particular port, you've identified the problem.

**WIRE TANGLES** Most Ethernet problems result from bad or improperly wired cables. Buying ready-made cables designed for 10Base-T helps prevent problems. Still, you should have spare Category 5 cables for testing suspected wiring problems. Bad cable routing can induce noise in an Ethernet cable. Avoid routing cables in parallel with AC power lines, device power cables, or RS-232 printer cables.

Although you're not likely to reach 10Base-T's length limitations in a small office or home, it's easy to forget that 90 metre limit between hub and device. You can extend this limit by connecting up to three

hubs in a series (follow manufacturer instructions for interconnecting hubs).

### The last word

All in all, a 10Base-T Ethernet network for a small workgroup will set you back about \$800 which includes an eight-port hub, three PCI cards, and three Category 5 cables. Buying a system with room for expansion will save you hassles down the line when you want to add machines to your network.

With its higher performance and low cost, Ethernet is a better choice than LocalTalk for small networks. Using quality components and avoiding common wiring errors are the secret to building a reliable LAN and enjoying the benefits of being well connected.



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1.08GB Seagate Medallist AV	11ms	256K	3 Years	LPS	5400	\$384	\$458
1.08GB Seagate Hawk AV Ultra	9ms	512K	3 Years	LPS	5400	\$528	\$629
2.14GB Seagate Hawk XL	9ms	512K	5 Years	LP	5400	\$656	\$780
2.14GB Seagate Hawk 2XL Ultra	9ms	512K	5 Years	LP	5400	\$682	\$811
2.14GB Seagate Hawk 2XL AV Wide	9ms	512K	5 Years	LP	5400	\$781	\$928
2.17GB Seagate Barracuda AV	8ms	512K	5 Years	LPS	7200	\$764	\$908
2.17GB Seagate Barracuda Wide AV	8ms	512K	5 Years	LPS	7200	\$844	\$1,003
2.1GB Quantum Fireball Tempest	10.5ms	128K	3 Years	LPS	4500	\$336	\$399
2.16GB IBM AV 5400 U Capricorn	8.5ms	512K	3 Years	LPS	5400	\$428	\$509
2.16GB IBM AV 5400 UW Capricorn	8.5ms	512K	3 Years	LPS	5400	\$465	\$553
2.4GB Fujitsu SCSI AV Ultra	9.5ms	506K	5 Years	LPS	7200	\$722	\$858
2.4GB Fujitsu SCSI AV Ultra Wide	9.5ms	512K	5 Years	LPS	5400	\$749	\$890
3.2GB Fireball Quantum Ultra	10.5ms	128K	3 Years	LPS	4500	\$444	\$526
4.3GB Fireball Quantum Ultra	9.9ms	128K	3 Years	LPS	5400	\$565	\$680
4.3GB IBM AV (5400) U Capricorn	8.5ms	512K	5 Years	LPS	5400	\$612	\$727
4.1GB IBM AV (5400) U Capri. Wide	8.5ms	512K	5 Years	LPS	5400	\$684	\$813
4.35GB Fujitsu AV Ultra	8ms	506K	5 Years	LPS	7200	\$1,108	\$1,317
4.35GB Fujitsu AV Ultra Wide	8ms	506K	5 Years	LPS	7200	\$1,133	\$1,347
4.3GB Seagate Barracuda AV	8ms	1024K	5 Years	HH	7200	\$1,120	\$1,335
4.3GB Seagate Barra. AV Wide	8ms	1024K	5 Years	HH	7200	\$1,199	\$1,429
4.5GB IBM Scorpion AV	9.5ms	512K	5 Years	HH	7200	\$1,140	\$1,350
4.5GB IBM Scorpion Wide	9.5ms	512K	5 Years	HH	7200	\$1,140	\$1,350
4.5GB Quantum Viking	8.5ms	512K	5 Years	LPS	7200	\$1,043	\$1,240
4.5GB Quantum Viking Wide	8.5ms	512K	5 Years	LPS	7200	\$1,074	\$1,276
4.5GB Seagate Cheetah AV(10000)	8ms	512K	5 Years	LPS	10000	\$1,352	\$1,607
4.5GB Seagate Cheetah AV/WIDE 10K	8ms	512K	5 Years	LPS	10000	\$1,432	\$1,700
9.1GB Quantum Atlas2	8ms	1024K	5 Years	HH	7200	\$1,973	\$2,345
9.1GB Quantum Atlas2 Ultra Wide	8ms	1024K	5 Years	HH	7200	\$2,015	\$2,395
9.0GB Seagate Cheetah AV(10000)	8ms	512K	5 Years	HH	10000	\$2,085	\$2,478
9.0GB Seagate Cheetah AVWIDE 10K	8ms	512K	5 Years	HH	10000	\$2,164	\$2,578
9GB IBM Ultra Star 2XP AV Ultra	8ms	512K	5 Years	HH	7200	\$1,911	\$2,271
9GB IBM Ultra Star 2XP AV Ul. Wide	8ms	512K	5 Years	HH	7200	\$1,939	\$2,304
9GB Seagate AV Barracuda	8ms	1024K	5 Years	HH	7200	\$1,780	\$2,116
9GB Seagate AV Barracuda Wide	8ms	1024K	5 Years	HH	7200	\$1,862	\$2,213
23GB Seagate	11ms	1024K	5 Years	FH	5400	\$3,870	\$4,600

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Agfa Duoscan 36bit 1000/2000 dpi colour scanner inc. tranny adaptor.	\$6,434	\$7,850
Polaroid SprintScan 35mm slide and neg colour scanner inc. Mac kit.	\$2,080	\$2,530
Microtek E3 600 dpi single pass 24bit colour scanner.	\$356	\$435
Nikon Cool Scan LS1000 36bit colour scanner.	\$1,800	\$2,087

Nikon SuperCoolScan LS1000 colour scanner inc.		
Photoshop LE.	\$1,800	\$2,087
Nikon ScanTouch AX-210 1200dpi 24bit colour scanner.	\$863	\$990
Nikon AX110 600x300dpi .Inc. Photoshop LE & Omnipage OCR Software.	\$540	\$648
Umax Astra S1200S Scanner.		
1200dpi 30bit colour scanner	\$855	\$1,026
Agfa Snapp Scann 600dpi single pass 24bit colour	\$519	\$570

Umax Astra 600S 600dpi 30bit colour scanner.	\$409	\$495
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Umax Powerlook 2000, 2000 x 1000dpi colour scanner inc. Binuscan Photopreperfect s/ware & tranny adaptor.	\$5,643	\$6,884
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Umax Powerlook 2, 36 bit, 1200 x 600dpi, tranny and Binuscan.	\$2,200	\$2,700
Buy any Umax Scanner - get the full version of Adobe Photoshop for only .....	\$288	\$288
Omnipage Pro 7 with Umax.	\$265	\$280

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Agfa Studio Star Trans. Unit.	\$354	\$425
Umax Astra Trans Unit	\$345	\$417
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Hitachi 15" multi-res Monitor.	\$581	\$685
Hitachi 17" multi-res Monitor.	\$883	\$1,024
Hitachi 17" High-res Monitor.	\$1,204	\$1,421
Hitachi 20" multi res Monitor.	\$2,039	\$2,345
Hitachi 21" flat digital 801.	\$2,608	\$3,157
Hitachi 21" flat digital 2112.	\$2,910	\$3,346
Sony SF200 17".	\$1,373	\$1,662
Sony CPD300 20".	\$2,731	\$3,332
Mitsubishi/97DIMATRON 21"	\$2,645	\$3,255
Mitsubishi/Dimatron 17"	\$1,093	\$1,391

Professional range 21 monitors		
Hitachi 21" flat digital 803.	\$3,180	\$3,781
Conerstone 21", 1600x1280	\$3,048	\$3,880
Professional range monitor card		
ATI Xclaim 8MB V&3D Card	\$455	\$550
SCSI ACCELERATOR CARDS	EX-TAX	INC-TAX
FWB PCI Ultra SCSI Card	\$512	\$614
Atto Xpress PCI wide SCSI-3.	\$512	\$615

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**\$565**

**\$612**

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Fireball Hard  
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BJC4550 Inkjet  
Colour Printer

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CD-ROM blanks.

**\$7**



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GCC XL608et 600dpi PostScript Laser Printer. 8MB RAM & Ethernet.	\$3,789	\$4,583
GCC XL616 600dpi, 16ppm P/Script Laser.		
Ethernet/Edge-to-Edge.	\$4,838	\$5,752
GCC 1208S A3 oversize.	\$8,794	\$9,520
GCC XL808 800dpi P/Script Laser Printer.		
Ethernet & Edge-to-Edge.	\$5,560	\$6,253
GCC XL1208 1200dpi P/Script Laser Printer.		
Ether. & Edge-to-Edge printing.	\$6,664	\$8,064
GCC Elite A4, 1200dpi.	\$2,400	\$2,806
Epson Stylus Colour 600 Mac.	\$468	\$546
Epson Stylus Colour 800 Mac.	\$675	\$787
Epson Stylus Colour 1520 Mac.	\$1,623	\$1,891
Epson Stylus Pro Colour Mac.	\$569	\$672
Canon 4550 Bubble Jet Colour printer.		
A3/A4 720dpi.	\$595	\$694
RIP for Canon 4550 Bubble Jet.	\$240	\$240
Epson Stylus Pro Colour XL Plus. A3 plus near-photographic quality printing.	\$1,997	\$2,277
Postscript RIP for Pro XL.	\$449	\$449
Ethernet Cardd for Pro XL.	\$529	\$645

SYQUEST, JAZZ, ZIP DRIVES	EX-TAX	INC-TAX
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SyJet 1.5GB Drive inc. cart.	\$730	\$890
Zip Removable Drive inc. cart.	\$207	\$260
Jazz 1GB cartridge.	\$136	\$162
SyJet 1.5GB cartridge.	\$132	\$161
Zip 100MB cartridge.	\$19	\$22
Sony Zip 100MB cartridge.	\$19	\$22
SyQuest 270MB Ext Drive/cart.	\$381	\$461
Syquest 230 Ezy Flyer cart.	\$45	\$55
SyQuest 270MB cartridge.	\$77	\$94
SyQuest 200MB cartridge.	\$94	\$114
SyQuest 135MB cartridge.	\$33	\$40
SyQuest 88(C)MB cartridge.	\$66	\$80
SyQuest 44MB cartridge.	\$58	\$70

FLOPPY DISKS	EX-TAX	INC-TAX
Box 10 HD Floppy Disks.	\$7	\$9

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Sony 4/16Gb external DAT.	\$1,626	\$1,968
Optima DAT Drive w/DeskTape.	\$1,374	\$1,677
Quantum Hi-Speed 15/30Gb.	\$4,799	\$5,611
Quantum Hi-Speed 20/40Gb.	\$7,320	\$8,558
Sony 3-user w/Retro Remote.	\$1,637	\$1,964
Sony 3-user w/Retro Remote.	\$1,853	\$2,223
DG90S 90MB DAT Tapes.	\$11	\$17
DG120 120MB DAT Tapes.	\$22	\$28
AIT 50 GIG Tapes.	\$161	\$208

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Yamaha 4 speed Burner/Toast.	\$1,128	\$1,286
DiskOvery 1300CDR Burner.	\$995	\$1,170
Philips CD Burner/Toast Pro	\$725	\$875
Kodak Gold CD-ROM's 74 min.	\$6	\$7
Philips Gold 74 Min. Media.	\$5.40	\$6.40

Kodak 74 min.  
CD-ROM Blanks **\$6**

100MB Zip  
Cartridges **\$19**

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Sony 1.3GIG Opt. cartridges.	\$116	\$139
Sony 2.6GIG Opt. cartridges.	\$92	\$110
ART TABLETS	EX-TAX	INC-TAX
Art Pad II 4x5".	\$206	\$257
Wacom 6x8" ArtZ2.	\$405	\$485
Wacom 12x12" ArtZ2.	\$494	\$568
Wacom 18x12".	\$686	\$830
Painter with Tablets.	SCALL	SCALL
MODEMS/FAX MODEMS	EX-TAX	INC-TAX
Banksia Macwave 33.6	\$240	\$280
Maestro Jetstream.56K	\$251	\$298
GV Teleport Plat. V34/Fax.	\$287	\$341
Maestro Executive.56K	\$329	\$398
Supra 56K	SCALL	SCALL
Netcomm Roadster 56k	SCALL	SCALL
US Robotics 56K/2 Voice	\$279	\$310

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64Mb DIMMS.	\$379	\$454
4Mb 72 pin SIMMS.	\$31	\$37
8Mb 72 pin SIMMS.	\$61	\$73
16Mb 72 pin SIMMS.	\$107	\$129
32Mb 72 pin SIMMS.	\$188	\$224
4Mb 30 pin SIMMS.	\$37	\$45
16Mb 30 pin SIMMS.	\$140	\$169
1 Mb V Ram DIMMS	\$39	\$49

DIGITAL CAMERAS	EX-TAX	INC-TAX
Kodak DC50	\$897	\$1,145
Kodak DC25	\$575	\$734
Quark XPress 3.32 PPC	\$1,869	\$1,869

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**\$188**

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PowerCentre Pro 210Mhz Tower. 604e, 60 Mhz Bus, 1MB L2 Cache, 2GB HD, 16xCD, MacBench Score 568 (No. 2 in speed!).	\$4,047	\$4,891
PowerCentre Pro 180Mhz Tower. 604e, 60 Mhz Bus, 1MB L2 Cache, 2GB HD, 16xCD, MacBench Score 528 (No. 3 in speed!).	\$3,414	\$4,340
PowerTower Pro 225MHZ. 604e, 32MB RAM, 2GB HD, 8MB IMS, 1MB L2 Cache, 6PCI slots.	\$5,016	\$5,749

### POWER SPECIALS • SPECIALS • SPECIALS

PowerBase 200. 16MB RAM, 1.2GB HD, 8XCD, 3 PCI Slots.	\$1,716	\$1,995
PowerCentre 604/150. 16MB RAM, 1GB HD, 8xCD CD-ROM, 1MB VRAM).	\$2,600	\$3,079

### UMAX SYSTEMS EX-TAX INC-TAX

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UMAX Pulsar 166/604e, 16MB RAM, 2GB HD, 8xCD-ROM, 2MB VRAM, PCI.	\$2,818	\$3,437
UMAX Pulsar 180/604e, 16MB RAM, 2GB HD, 8xCD-ROM, 2MB VRAM.	\$3,444	\$4,202
UMAX Pulsar 200, 16MB RAM, 2GB HD, 8xCD-ROM, 2MB VRAM.	\$3,674	\$4,483
UMAX Pulsar 225, 16MB RAM, 2GB HD, 8xCD, 2MB VRAM.	\$3,853	\$4,700
UMAX Pulsar Pro 200. 604e, Dual Processor Option, 512K L2 Cache, 6PCI Slots, 4MB IMS 128 Card, 32MB RAM, 8xCD.	\$4,842	\$5,907
UMAX Pulsar Pro 225. 604e, Dual Processor Option, 512K L2 Cache, 6PCI Slots, 4MB IMS 128 Card, 32MB RAM, 8xCD.	\$5,284	\$6,447
UMAX Pulsar Pro 233. 604e, Dual Processor Option, 512K L2 Cache, 6PCI Slots, 4MB IMS 128 Card, 32MB RAM, 8xCD.	\$4,577	\$5,584
Dual Processor Card 233Mhz.	\$1,607	\$1,961
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The Sony  
Multiscan 200sf

If that would be an epic disaster for your bank account, consider a 17in monitor. With about half the pixels for half the money, a 17in monitor still offers plenty of virtual desktop room for image editing or spreadsheet work, and more real desktop room for your coffee mug. Also, because limitations of tube technology make consistent colour, brightness, and focus harder to achieve at larger sizes, 17in monitors actually tend to deliver better image quality than their colossal cousins do. That makes it easier to shop for features and price without compromising on the picture.

Still, not all 17in monitors are created equal. *Macworld's* expert panel of graphic designers, editors, and lab analysts put 19 popular models on the casting bench to determine which pictures are easiest on the eyes and which controls are easiest on the brain (as well as fingers). Then we compared prices and rated our monitors accordingly. We found five excellent choices for under \$2000, and even one acceptable alternative as low as \$1100.

#### Screen test

In this business, looks count. A poor display causes discomfort and potentially hazardous eyestrain, so look for a screen image that's bright, vivid, and sharp. We were

impressed with nearly all these monitors, but a few stood out at either extreme.

Most critical to image quality is focus. *Macworld's* panel tested every monitor with a full-screen spreadsheet, checking for sharp lines and legible text across the entire display area. You want sharp, clear characters, as we saw on the VisionMaster Pro 17 from Iiyama (<http://www.iiyama.com>) and the SyncMaster 17GLSi from Samsung (<http://www.sosimple.com>).

Brightness is next on the list. A good monitor can shine through bright ambient lighting conditions from the morning sun to glaring office fluorescents. Studying a full-range greyscale photo on each screen, our experts tagged Eizo Nanao's (<http://www.eizo.co.jp/welcome/>) FlexScan F56 as the brightest of all. On the dark side, the DX700T from Mag Innovation (<http://www.maginnovation.com>) couldn't hold a candle to the rest.

## 17-inch monitors compared

Company	Product	Estimated price*	Distributor	Phone
Apple Computer	AppleVision 1710	1500	Apple Australia	1800 025 355
	Multiple Scan 1705 Display	1200		
Eizo Nanao Technologies	FlexScan F56	1989	Itochu Australia	(02) 9239 1500
	FlexScan F55	1699		
Hitachi	Hitachi CM600	1100	Hitachi Australia	(02) 9888 4100
	Hitachi CM 611	1600		
Iiyama North America	VisionMaster 17	1590	OmniTech	(02) 9517 1144
	VisionMaster Pro 17	1795		
Mag Innovation	DJ717	1280	MAGTRON Monitors	(02) 9975 3727
	DX700T	1310		
Mitsubishi	Diamond Pro 17HX	1617	Mitsui Computer	(02) 9935 2400
NEC Technologies	MultiSync P750	2485	NEC Australia	(02) 9868 1811
	MultiSync XV17+	1639		
Samsung	SyncMaster 17GLi	1312	Mitsui Computer	(02) 9935 2400
	SyncMaster 17GLSi	1715		
Sony Computer	Multiscan GDM-17sell	2463	Sony Australia	(02) 9887 6667
	Multiscan CPD-200sf	2107		
ViewSonic	Optiquest V775	1399	Chips and Bits	(03) 9696 1911
	17PS	1459		

\*These prices are quoted by distributors. Actual street prices may vary.



Equally important is contrast. You want to see deep blacks alongside those bright whites, and clear distinctions of all the grey levels in between. This gives images depth and definition, as we saw in our greyscale photo on the FlexScan F56.

Colours should be rich, brilliant, and realistic. We evaluated colour with an Adobe Photoshop image created by *Macworld* especially for displaying everything from saturated primary colours to subtle shades and flesh tones. Especially impressive was the P750 from NEC (<http://www.nec.com>) and the Multiscan 17seII from Sony (<http://www.sony.com/technology/>) which, however, had a slight but noticeable magenta cast.

Although the Multiscan 17seII allows you to customise the colour balance to correct for such anomalies or compensate for different lighting conditions. The Options button in the Monitors control panel gives

you access to page-white and uncorrected gamma settings in addition to the default Mac standard, but these settings are far too coarse for precise colour control. (For more about adjusting display characteristics, see the sidebar, "Taking control — How easy is it to get the best from your monitor?")

### Wading through specs and hype

Monitor vendors toss a lot of terminology around to hype their products. Don't let that sway you. Look at the screen, not at the spec sheet.

All cathode-ray tubes (CRTs) contain a thin metal mask that helps keep the electron beams trained on the correct phosphor elements in the tube to project a clear image on screen. Shadow-mask monitors contain phosphor dots; aperture-grille monitors (Trinitrons and Diamond-Trons) have phosphor stripes. The

new CromaClear CRT from NEC is essentially a hybrid of the other tube types, using elliptical phosphors. The three types look different, but none is inherently better. Also, all these tubes have equally effective antiglare and antistatic screen coatings.

Dot, grille, and mask pitch refer to the distance between the dots or stripes used to display the image. Smaller numbers mean a finer resolution of details, but as with CRT type, those numbers didn't correspond with our panel's preferences. Even the largest dot pitch yielded a crisp picture.

Some of these monitors can display as many as 1280 x 1024 pixels, but cramming two pages' worth of information onto a 17in screen is generally impractical. At such high resolutions, details are too small to see, and the number of pixels can exceed the number of dots or stripes available to display them.

Another figure not to worry about is refresh rate. Vendors boast fast maximum refresh rates for their monitors, but the actual rate is determined by the Mac's built-in or card-based video circuitry, not the monitor. Thus, all these monitors will refresh at the same rate on your Mac.

If you're concerned about energy conservation and low-frequency emissions, relax: every one of these monitors meets or exceeds the Swedish government guidelines for low emissions. The Swedish standard is renowned for its zealous pursuit of minimal emissions which are noticeably more strict than Australian standards.

### Buying tips

While our panel's responses are an excellent guidepost, you're the one who's going to be living and working with this monitor. What matters is how comfortable you are with the image quality, controls, and credit card bill. Shop for your needs and tastes, using the types of tests we describe above. Trust your eyes above all else.

Don't succumb to feature-itis; more features don't make a better monitor. Concentrate on features you need — don't sweat the colour controls if you do mostly word processing — and on how easy it is to use the features you'll access regularly, such as brightness and contrast.

Viewable area (w x h, in inches)	Comments
12.9 x 9.7	Affordable, but what really sets the 1710 apart are excellent software controls
12.6 x 9.5	Good image quality tends to distort at high brightness; cheap buttons with no colour controls and no on screen display
12.6 x 9.4	Hardware controls take some getting used to, and at this price the excellent software controls (a \$25 option) should be included
12.8 x 9.5	Excellent image quality and software interface, but is exorbitantly expensive
12.8 x 9.7	Slightly clunky control interface but decent picture and low price make this a fair contender for the budget buyer
12.8 x 9.7	Is too pricey for merely average image quality and hard-to-see controls
12.6 x 9.4	Great image quality at a fine price; comprehensive but convoluted controls
12.8 x 9.6	Beautiful, feature-rich, and well priced; comprehensive but convoluted controls
13.0 x 9.6	Good image quality and low price, plus a cool Jag wheel control
12.9 x 9.8	Sharp image, sensible controls, and good price, but too dim for the top tier
12.8 x 9.5	Solid image quality, top-notch hardware and software controls, and a realistic price — a good contender
12.4 x 9.3	A bit pricey but worth it for a brilliant picture, and excellent controls
12.4 x 9.3	Rich colours and standard-setting on-screen controls at a good price
12.6 x 9.5	Good-looking display and snazzy controls; the price tag's right on the money
12.6 x 9.5	Bests the excellent 17GLi, adds custom colour controls — and hikes the price
12.9 x 9.5	Slight magenta cast and high price count against this exceptional unit
12.9 x 9.5	Sony's lauded Trinitron quality, elegant interface, at a surprisingly low price
12.7 x 9.5	The best combination of image quality and controls for under \$1400
12.8 x 9.7	Very good image quality and controls





**A Sensible Sony** The controls on the Multiscan 17sell are clearly identified and organised, so you are neither overwhelmed with buttons nor put through a maze of menus



**B Not-so-easy Eizo Nanao** Sometimes less really is less. The single, five-way button that serves as the control on the FlexScan F56 and FlexScan F55 perplexed our panellists

## HARDWARE CONTROLS

On-screen menu controls are a hit with manufacturers; the only monitor without them is the Apple Multiple Scan 1705 Display. However, on-screen controls were less popular with our panel.

The on-screen display and the hardware used to operate it should be clear, intuitive, and well integrated. Our panel preferred controls that offer both graphic and numeric on-screen

feedback, with dedicated physical buttons rather than multilevel menus for directly accessing display parameters. Sony's Multiscan 17sell and Multiscan 200sf both provide a perfect example of this, with large, well-organised, clearly labelled buttons (see A) that let you adjust practically everything within a single menu level.

Unfortunately, many vendors oversimplify the hardware while complicating the menus. Eizo

Nanao's FlexScan monitors confused our panellists with a single, square button that has a dot in the centre and an arrow on each side — essentially, five buttons in one (B). (Also, the button's right-hand placement is unfriendly to lefties.) The Mag Innovision DJ717's integrated wheel-and-button interface shares the right-hand bias and all-in-one control concept of the FlexScans, as well as having menus that make it necessary for you to scroll past every feature to exit.

## SOFTWARE CONTROLS

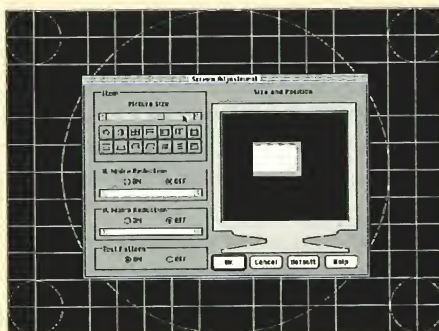
No matter how well implemented they are, on-screen controls for adjusting your display still aren't integrated with the rest of the computer system. Their interfaces are foreign (and generally inferior) to that of the Mac OS.

Eizo Nanao offers a vastly superior alternative in its Screen Manager Pro software (C). With a serial cable between the Macintosh and the monitor, you can use this application's Mac interface and your mouse to control your monitor.

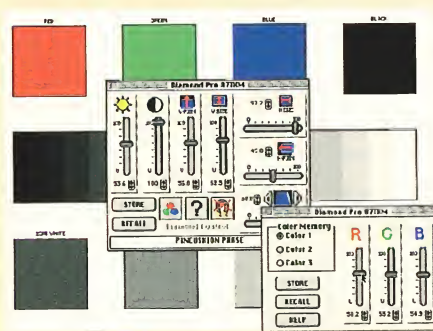
Mitsubishi has a comparable program called Diamond Control (D).

Apple (<http://www.apple.com>) has similar controls for its AppleVision 1710 Display (E). The AppleVision software, however, acts as a plug-in to Apple's Monitors & Sound control panel, which opens in place of an on-screen menu when you push the monitor's control buttons. The interface between the monitor and the Macintosh is an ADB cable, so you can use the monitor software all the time without having to tie up a serial port.

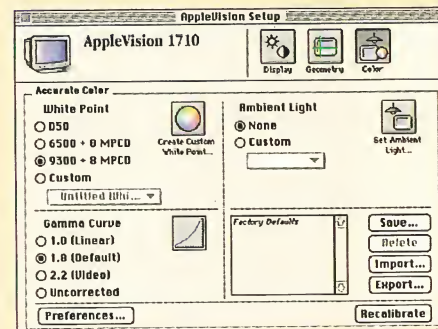
Five vendors — Eizo Nanao, Hitachi, Iiyama, Mitsubishi and Samsung — bundle Colorific colour-calibration software from Sonnetech (<http://www.colorific.com>). Using this software, you match graduated grey and colour squares on screen to one of two special vinyl overlays — one for fluorescent lighting and one for incandescent — setting the monitor's colour temperature and greyscale midpoint. Colorific works with Apple's ColorSync to match on-screen colours to printed output.



**C Nanao geometry** The test patterns in Nanao's Screen Manager Pro help make adjusting display characteristics a snap.



**D Diamond Control** Mitsubishi's Diamond Control lets you quickly and easily slide or nudge any display parameter to a precise value.



**E AppleVision** Apple's AppleVision software controls are well organised, comprehensive, and very easy to use.





## 17-inch monitors: image quality

Past testing has demonstrated that objective measurements of monitor brightness, contrast, and distortion do not reliably indicate image quality, so Macworld Lab conducted only subjective testing. As the scores below indicate, the top-ranking monitor for image quality has lots of close competitors. Before you buy, compare individual scores for any factors that are especially critical to your work — colour, brightness, and contrast for desktop publishing; distortion and focus for spreadsheets, CAD, and fine-line design.

■ Best result in test. Longer bars are better. Products are listed from best overall to worst overall.

	Overall score	Colour	Brightness	Contrast	Distortion	Focus
NEC MultiSync P750	0.99	3.8	3.8	3.9	4.0	3.6
Eizo Nanao FlexScan F56	0.98	3.6	4.0	4.0	3.8	3.6
ViewSonic Optiquest V775	0.97	3.9	3.4	3.9	3.9	3.7
Iiyama VisionMaster Pro 17	0.96	3.5	3.4	3.8	4.1	3.9
Iiyama VisionMaster 17	0.96	3.9	3.8	3.9	3.6	3.5
Samsung SyncMaster 17GLsi	0.95	3.5	3.8	3.8	3.5	3.9
Sony Multiscan 200sf	0.94	3.9	3.5	3.8	3.9	3.3
Mitsubishi Diamond Pro 87TXM	0.94	3.9	3.4	3.5	3.8	3.6
Eizo Nanao FlexScan F55	0.91	3.9	3.3	3.6	3.3	3.6
Mag Innovision DJ717	0.90	3.6	3.5	3.5	3.5	3.3
NEC MultiSync XV17+	0.90	3.9	3.5	3.8	3.3	3.0
Samsung SyncMaster 17GLi	0.89	3.8	3.4	3.1	3.8	3.3
Apple Multiple Scan 1705 Display	0.88	3.4	3.4	3.3	3.6	3.5
ViewSonic 17PS	0.88	3.6	3.3	3.4	3.5	3.4
Sony Multiscan 17sell	0.88	2.9	3.1	3.3	4.0	3.8
Apple AppleVision 1710	0.85	3.5	3.1	3.1	3.5	3.1
Hitachi CM611	0.84	3.6	2.9	2.8	3.6	3.4
Hitachi CM600	0.79	3.3	2.8	2.8	3.4	3.3
Mag Innovision DX700T	0.77	3.0	2.5	2.6	3.5	3.4

### Behind our tests

A panel of Macworld editors, designers, and art directors evaluated each product and gave it a subjective score from 1 to 5 (with 5 representing a perfect score) in the following critical areas: colour quality and accuracy, contrast, brightness, and focus. To gauge colour fidelity, the panel members compared each monitor's screen

image of a 24-bit colour Adobe Photoshop file; to gauge contrast and brightness, they looked at a 24-bit greyscale Photoshop file; and to gauge focus and distortion, they examined the grid and varying-size text of a Microsoft Excel spreadsheet. — Macworld Lab testing supervised by Matt Clark

Finally, make sure the monitor includes a Mac adapter or cable. (Adapters from companies such as Liberty and UniMac are available where monitors are sold.) Some monitor vendors arrange to have dealers provide adapters free on request, so don't forget to ask.

### The last word

With so many fine monitors, it was no easy task picking an Editors' Choice. On balance, Sony's Multiscan 200sf emerged with solid to exceptional ratings in every performance and interface category, but was quite pricey.

For solid price/performance advantages under \$1500, you can't go wrong with the all-around highly rated Optiquest V775 from ViewSonic (<http://www.viewsonic.com>). Ultimately, though, most of the monitors are good deals, with the star quality to be a big hit soon on a Macintosh desktop near you.

ViewSonic  
Optiquest V775





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**INTERFACE WITH THESE**

**EXPERT TIPS**

ADOBE ILLUSTRATOR 7 IS NOT WHAT YOU WOULD call a revolutionary upgrade. Imagine if Illustrator 6 suddenly took on the look and feel of Adobe's popular image editor, Photoshop, and you have a pretty fair idea of what Illustrator 7 is like: very few new features, yet a substantial change in interface. Oh, and for the first time in recorded history, Adobe will simultaneously ship the same version of Illustrator for both the Macintosh and Windows platforms. Is that yawning I hear? Are you one of those people who doesn't care about cross-platform consistency? Could it be you aren't attracted to an upgrade that does the same thing as its predecessor, just in a less familiar way?

In truth, I suspect that some graphic artists will opt to ignore Illustrator 7 and stick with their present version. But I won't

be among them. Version 7 looks to be the most straightforward release of Illustrator in the past five years, not only because it closely resembles Photoshop — an application that I and most other artists spend more time in — but also because version 7 just plain makes more sense. Adobe has done a solid job of housecleaning, and added a handful of efficiency enhancements to boot. Give yourself a week to adjust, and you'll be working faster in tomorrow's Illustrator than you are in today's.

### **Family resemblance works**

Illustrator 7 promises to mark the completion of the first successful professional graphics suite. Although companies like Macromedia and Corel have made stabs at creating suites of their own, their attempts so far have involved little more than sticking unrelated applications in the same box and adding a sprinkle of drag-and-drop support.

In contrast, the upcoming Illustrator 7 is designed to mimic the behaviour of Photoshop 4 so deftly that it's often difficult to tell the two programs apart. They share common commands, palettes, tools, and even keyboard shortcuts (see the sidebar "If you know Photoshop, Illustrator 7 makes more sense"). You won't find them bundled together, but after you learn to use one program, the other will seem like family.







# If you know Photoshop, Illustrator 7 makes more sense

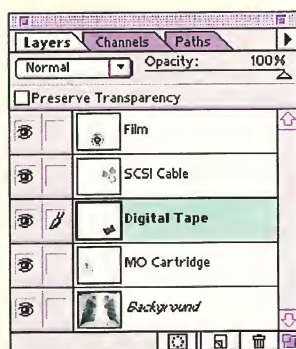
Although Illustrator 7 and Photoshop 4 serve very different functions — vector-based drawing on one hand versus pixel-based image editing on the other — they bear such striking on-screen similarity that you might initially mistake one for the other.

But the purpose of this resemblance is to illuminate, not confuse.

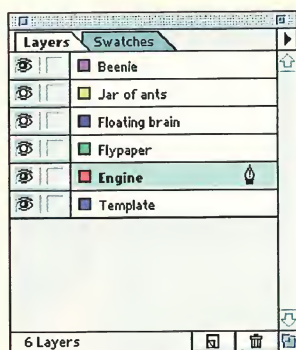
## LAYERS AND GRIDS

I doubt anyone will object to the new Layers palette, which looks and works similarly to Photoshop's. Both programs let you create, hide, activate, and reorder layers in the same manner. Illustrator loses the thumbnails and opacity controls. But it gives you better control over the location of a new layer, allows you to view layers in different modes, and lets you dim imported images for use as tracing templates. And for those who appreciate a little consistency, grids and guides work identically in the two programs.

Photoshop 4



Illustrator 7



**THE LOOK** The physical similarities between Illustrator and Photoshop are mostly a matter of palettes. For several years Illustrator and Macromedia FreeHand have battled to see which could do the best job of cluttering your screen with randomly sized palettes and ancillary toolboxes. In Illustrator 7 there's a single toolbox on the left side of the screen and a column of palettes (all the same width) on the right, with lots of space in between, giving you plenty of room to work.

Each palette may include multiple panels, and the palettes snap into alignment, just as in Photoshop. You can even attach one palette to the bottom of another, a trick lifted from FreeHand. Only one palette varies from the norm: the free-floating Tab Ruler stretches to fit your text block. It's all

so tidy, you'd swear it had been engineered by a team of programming elves.

**THE FEEL** Getting up and running with Illustrator 7 reminds me of my first week with Windows 95. I was initially frustrated until I stopped trying to use Windows 95 like the old Windows and started using it like its archetype, the Mac. Likewise, Illustrator 7 makes more sense if you bring your Photoshop experience to bear. This is especially important when working from the keyboard. To zoom in, press ⌘-plus sign (+); to bring the selected object to the front of a layer, press ⌘-shift-right bracket (]); to fill the screen with your artwork, press the F key. (For more, see the table, "Expert shortcuts to get you up to speed fast.")

A longtime Illustrator user might grumble that these shortcuts fly in the face of tra-

dition, but the clever Photoshop user recognises a well-thumbed page out of the old playbook.

My favourite change to the interface is the new ability to select tools from the keyboard, again à la Photoshop. Where FreeHand lets you select several of its tools by pressing number keys (which correspond to the tools' location in the toolbox), Illustrator and Photoshop assign more meaningful letter shortcuts. Press T to select the type tool, press P for the pen. Best of all, press X to switch between assigning a colour to the fill or to the stroke of a selection. Every icon in the toolbox gets a key; learn to use them and you can't help but work faster.

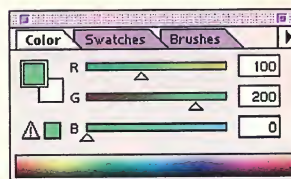
To ease Illustrator's transition to the Windows side, Adobe changed another

## COLOURS

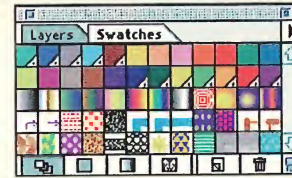
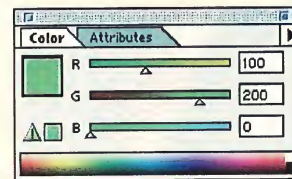
Photoshop's job is to colour pixels, while Illustrator attaches two colour attributes to each object: fill and stroke. Despite this fundamental difference, the new draw program finds common ground. To the probable dismay of Illustrator purists, the once-ubiquitous Paint Style palette has been chopped into several pieces. As in Photoshop, you now define your colours in one palette (top screens); store them for future use in another, called Swatches (bottom screens); and create gradients in a third. (A fourth palette accommodates strokes.)

Also taking a cue from Photoshop, Illustrator lets you quickly switch between fill and stroke by pressing the X key, and reset the default colours by pressing D. And though it's been a long time coming, Illustrator 7 finally supports the RGB and HSB colour models.

Photoshop 4



Illustrator 7

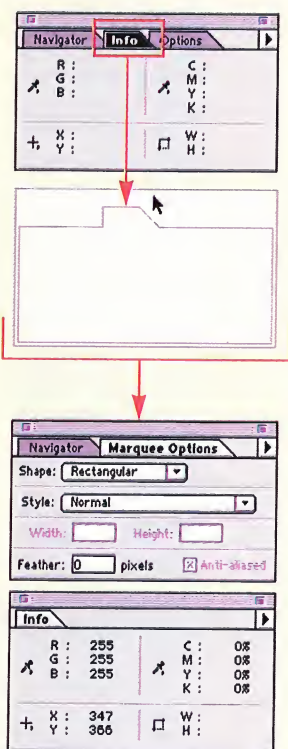




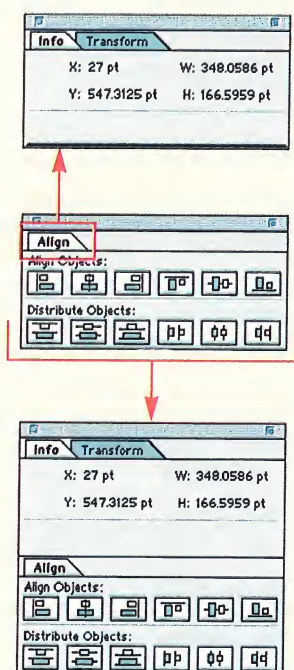
## TABBED PALETTES

Following Photoshop's lead, Illustrator 7 has adopted tabbed palettes. You can click on a tab to reveal another panel of options, or drag a tab (top left) out of a palette to create a new palette (bottom left). Both programs let you hide all palettes by pressing the tab key, or hide everything but the toolbox by pressing shift-tab. If you press shift-return after entering a value into any palette, Illustrator applies the value but leaves it highlighted, so you can change your mind and enter a new value. But the best trick comes not from Photoshop but from FreeHand: Illustrator lets you drag a tab top onto the bottom of a palette (top right) to "dock" two palettes together (bottom right).

Photoshop 4



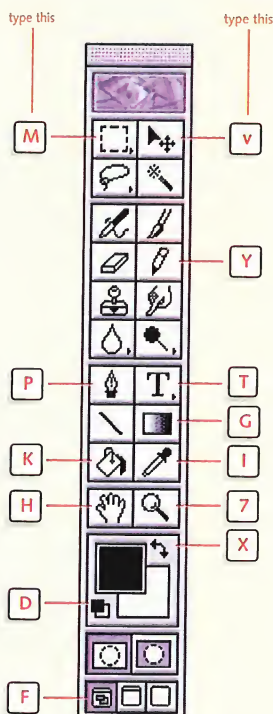
Illustrator 7



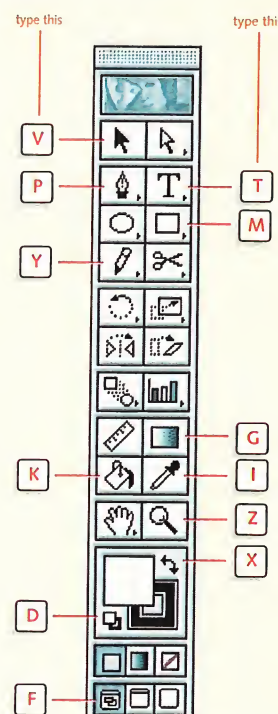
## KEYBOARD SHORTCUTS

Illustrator and Photoshop exploit keyboard shortcuts more than most graphics applications. Artists who use them learn that a little key can be a powerful ally, permitting you to keep your cursor and attention inside the illustration without hunting around for icons and commands. Realising that too many memorised shortcuts can junk up your brain, Illustrator 7 lets you free up a few brain cells by having its interface mimic Photoshop wherever possible. For the first time, you can activate a tool or icon by pressing a key, and tools that have counterparts in Photoshop share the same keys (as shown below). Mutual navigation, selection, and file-management functions are also standardised.

Photoshop 4



Illustrator 7



group of keyboard shortcuts. Because of the PC's lack of a fourth modifier key, Adobe struck any key equivalent that involved the control key. (Control-clicking now brings up a context-sensitive pop-up menu.)

If you can't cope with the shift away from the control key or you miss stone-cold-dead shortcuts like  $\mathbb{C}$ -control-U, which used to cycle the unit of measure, you can select a preference check box to bring all the control-key shortcuts back. That said, I recommend you try to wean yourself off the old ways; I doubt this preference setting will find its way into Illustrator 8.

**THE IMAGERY** Look and feel is only half the battle in creating a bridge to Photoshop. The other half is supporting the images that Photoshop creates. Illustrator 6 did a fine job of recognising image file formats such

as TIFF and JPEG, but it invariably parsed the images. This meant integrating the pixels into Illustrator's native PostScript file format, converting the colours to CMYK, and ballooning the size of the saved documents to absolutely outrageous proportions.

Illustrator 7 has wisely revamped its image support. Although image support didn't work altogether reliably in the beta version I used, Adobe assures me that you'll be able to place any image format and maintain a link to a file on disk. The result will be smaller and more manageable files. Illustrator 7 also supports RGB images, converting them to CMYK only when printing colour separations.

Finally, the autotrace tool now manages to trace colour images, a far cry from the old black-and-white limitation. Unfortun-

nately, the tool is still limited to creating one path at a time, and the controls are quite unsatisfactory. To appease its critics, Adobe plans to bundle its stand-alone tracing program, Streamline, with all copies of Illustrator 7.

## Features under the microscope

When I put the words features and Illustrator 7 together in the presence of an Adobe representative, he said something like, "You have to realise, this is a huge improvement on the Windows side" (which last stalled out at Illustrator 4.1). In other words, it's pretty slim pickings on the Macintosh.

This is not to say that new features don't exist. They're just so minor that they normally would register as distant blips on the



# Reviews

## The legend continues

EASIER AUTHORIZING, POWERFUL WEB LINKS

**T**he challenge: to make Director, Macromedia's venerable multimedia-authoring powerhouse, easier to use while extending its talents — without forcing veterans to start from scratch. The verdict: although Director 6 doesn't match the simplicity of some competing authoring programs, it's easier to learn and use than version 5.0. Longtime Director users will still find themselves at home and will revel in the new productivity-boosting features, while power-hungry developers will find a feast of high-end features addressing everything from animation to the Web.

Director obviously has the lead role in Director 6 Multimedia Studio, but the supporting cast deserves a mention. SoundEdit 16 2.2 is a powerful, easy-to-use audio editor; xRes 3 is a solid image-editing package; and Extreme 3D 2.0 is an industrial-strength 3D modelling and rendering package. All the programs have similar interfaces and work well together.

### Settling the score

Director has always had a steeper learning curve than the competition because it takes a frame-by-frame, timeline-oriented approach: when you run a project, playback proceeds sequentially unless a script tells it to jump to a specific frame. This operating style is ideal for creating animations, but it means extra work when you're creating interactive projects such as CD-ROMs. To keep a particular scene visible until, say, a user clicks on a button, you must write a script

that tells Director to play that frame over and over again.

By comparison, programs such as mFactory's mTropolis and Allegiant's SuperCard take a screen-oriented approach similar to that of a publishing program. You create a screen, then add text, graphics, movies, and other media elements. To create a button that leads to a different screen, for example, you choose commands that add the appropriate interactivity. When the project runs, a screen remains visible until the user clicks on the button.

While Macromedia hasn't changed Director's basic approach to interactivity — you'll still find yourself fighting the program's innate desire to play your project from start to finish with no pauses — it has taken steps to make the program easier to work with. One improvement is a redesigned Score window, without the headache-inducing hieroglyphics the previous versions displayed (see "Director scores big"). Director 6 also supports multiple Score windows, giving you numerous views into a project's timeline. You





can set different zoom scales and display options for each window, and drag and drop elements (called sprites) from one window to another.

No other authoring program could touch Director 5's animation features, and Director 6 ups the ante. Where Director 5 allowed up to 48 sprites in each Score (and therefore on the Stage), Director 6 allows up to 120 sprites on the Stage simultaneously, and you can animate each one at up to 500 frames per second.

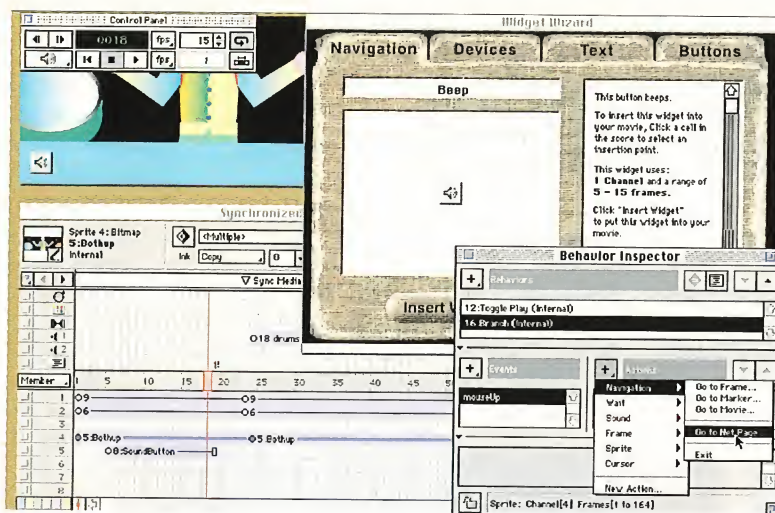
In the new Score window, working with sprites is much easier than in previous versions. Gone is the In Between command, Director 5's clumsy way of moving a sprite across the Stage; you can now animate a sprite by simply selecting the last frame in which it appears and dragging it to its final destination. You can also insert keyframes to create complex animation paths. And if you resize a sprite so it appears in more or fewer frames, Director 6 resizes the keyframes proportionally so the sprite travels faster or slower along the animation path.

### Limited behaviour

To address users' criticisms of Director's script-dependent approach, Macromedia has added a Behavior Inspector. This new tool lets you create interactive buttons and hot spots without using Director's Lingo language. It works, but it doesn't go as far as similar features in competing products.

In the Behavior Inspector, you choose an object, an event (such as a mouse-click), and an action (such as playing a sound) from pop-up menus, and Director creates a Lingo script. Alas, the generated scripts aren't commented, so their value as learning aids is limited. What you can do with the Behavior Inspector is also limited. You can't use it, for example, to build a behaviour that controls the playback of a QuickTime movie. For this and other advanced tasks, Director includes a library of canned behaviours — in the form of Lingo scripts — that you can drag and drop onto sprites or frames.

Along with the new Widget Wizard, which allows one-click access to common interface elements, these behaviours are solid steps forward, but they don't give Director the simplicity of mTropolis; Lingo still lurks just beneath the surface.



**Director scores big** Director 6's new Behavior Inspector (bottom right) and Widget Wizard (top right) let you create interactive projects without scripting

### Speaking the Web's Lingo

Director's reliance on scripting makes for a steeper learning curve, but it's also what makes Director such a superb tool for high-octane interactivity. In version 6, Macromedia extends Lingo's vocabulary to allow greater control over media and stronger ties to the Internet.

One significant new feature is the ability to synchronise an animation with an audio track or QuickTime movie. In previous versions, synchronising animation with audio was a hit-or-miss affair; it's rock solid in Director 6, thanks to tighter integration between Director and SoundEdit 16. You can use SoundEdit 16 to add bookmark-like labels to a sound file or QuickTime movie, then import the sound or movie and synchronise animation events with the labels.

Many of the Lingo enhancements in version 6 add capabilities to Shockwave for Director, the technology that enables Director movies to play within Web browsers. Because Shockwave itself now supports streaming (which allows a Director movie to begin playing while it's still downloading), it's a far more viable option for Web developers who want to add CD-ROM-like features and animations. Director 6 also supports browser scripting: using JavaScript or Microsoft's VBScript, you can control Shockwave movies — for example, pause and resume playback or jump to a specific point.

Director 6 also makes it easier to create hybrid CD-ROM/Web projects. You can now import and establish links to graphics, text, and other elements stored on Web sites; when a CD-ROM containing Web links runs, it retrieves and displays

those media elements. Director's enhanced Web features don't approach those of third-party plug-in modules — such as g/matter's XtraNet or Allegiant's Marionet for Director, both of which give programmers low-level access to Internet protocols — but they're more than adequate for creating simple hybrid CD-ROMs that retrieve and display information from Web sites.

Another way the Web has infiltrated Director 6 is in the program's unmatched built-in help system: it now features Web links that take you directly to relevant areas of Macromedia's Web site, where you can download examples, read new tips, and get late-breaking information.

### The last word

Although an enhanced Score window and new behaviour features make the program more approachable for beginners, Director remains more difficult to learn than mTropolis.

Nonetheless, Director 6 Multimedia Studio is a first-rate bundle of production power, and Director remains the premier tool for professional multimedia development. It offers more options for tuning performance, superior animation features, and stronger ties to the Web. No other authoring program provides a more powerful mix of features, productivity aids, and performance. — JIM HEID



## Director 6.0

**Application:** Multimedia and Web development program

**Min. requirement:** 68040 processor (PowerPC recommended); System 7.1 or greater (requires QuickTime); 16Mb application RAM; 85Mb hard disk space

**Source:** Macromedia

<http://www.macromedia.com>

**Distributor:** Firmware Design, (047) 217 211

**Price:** Stand-alone: \$1399; Studio: \$1599 (includes Extreme 3D 2.0, xRes 3.0 and SoundEdit 16)



# Finding the centre

POWER COMPUTING LINE REDEFINES MID-RANGE

**P**ower Computing's new PowerCenter Pros render the distinction between high end and mid-range largely irrelevant. Though they target mid-range users, these machines offer the per-

formance you'd expect from Macs much higher up the food chain, consistently outpacing more expensive machines with comparable CPUs and fewer features. The PowerCenter Pro 210 even rivals its high-end cousin, the PowerTower Pro 225, which hasn't had much competition until now.

In their base configurations, the PowerCenter Pro 180 and 210 cost \$2095 and \$2395, respectively — not bad for systems with a 60MHz bus, 1Mb of upgradable cache, a 16x CD-ROM drive, 16Mb of RAM, 2Mb of VRAM (upgradable to 4Mb), and a 2Gb drive.

In its tradition of combining innovation and thrift, Power recycled a modified design for the Apple Catalyst motherboard from its discontinued PowerTower 180. Catalyst (also used in the Power Mac 7200) runs at 60MHz, up from the usual 50MHz. This isn't breakthrough technology, but it is clever and effective: faster buses enable the CPU to work more efficiently.

The systems we tested were slightly upgraded from the base models to include 32Mb of RAM, 4Mb of VRAM, and Seagate's AV-optimised Barracuda hard drive. The PowerCenter Pro 180 outran Apple's

Power Mac 7300/180 by 13 per cent but costs about \$700 more than a similarly configured 7300 (which ships with only 256K of cache, a 12x CD-ROM drive, and a 45MHz bus).



PowerCenter Pro 210, left, and PowerCenter Pro 180

Although the PowerCenter Pro 210 isn't supposed to compete with high-end Tsunami-based machines, it outpaced the Power Mac 9600/200 by 2 per cent overall in Macworld Lab tests. The PowerCenter is also more expandable than its Power Mac competitor. The 9600 comes with just 512K of cache (soldered onto the board) and a 12x CD ROM drive — although it ships with 4Mb of VRAM and six PCI slots (to the PowerCenter Pro's three). And the 9600 costs almost \$1500 more than the PowerCenter model.

Both PowerCenter Pros include an

upgradable CPU (although no CPU upgrade cards exist at this time) and a 20MB/sec Adaptec SCSI-3 card with internal and external connectors (in addition to the standard external and internal SCSI-1 connectors), letting you add faster hard drives both inside and outside the case. Although this unique dual-SCSI chain approach can be confusing, it offers great flexibility. PowerCenter Pros ship with all the standard Mac I/O ports, too.

The video circuitry in the PCI riser card offers 3D and 2D acceleration using the Rage II chip from ATI Technologies, worth around \$500. Although the PowerCenter Pro's desktop enclosure doesn't have any free drive bays, the minitower includes two free 5.25in bays. One disadvantage: there's not much room to manoeuvre between bays.

## The last word

You won't go wrong with either PowerCenter Pro system; both are more forward-looking than most Macs today, including high-end systems. Although both are great value, the 210 offers a mere 5 per cent performance improvement over the 180 and costs \$500 more — the 180 is a slightly better buy in the configurations we tested. — TOVA FLIEGEL

## PowerCenter Pro

**Source:** Power Computing  
<http://www.powercc.com>

**Distributor:** Mitsui Computer  
<http://www.mitsui.com.au>

**Phone:** 1800 025 376

**Price:** 180MHz — \$4212;  
 210MHz — \$4795



## PowerCenter Pros rival high-end systems

Longer bars are better. Results are times as fast as a Centris 650 (Centris 650 = 1.0).  
 Products are listed from fastest overall to slowest overall.

	Overall Score	CPU-Intensive	FPU-Intensive	Disk-Intensive
PowerTower Pro 225	9.2	9.4	13.4	3.5
PowerCenter Pro 210	8.9	9.0	12.9	3.6
Power Macintosh 9600/200	8.7	8.9	12.1	3.5
PowerTower Pro 200	8.5	8.4	12.7	3.5
PowerCenter Pro 180	8.3	8.4	11.7	3.7
Power Macintosh 7300/200	7.7	7.9	11.5	2.3
Power Macintosh 7300/180	7.2	7.3	10.9	2.2

— Macworld Lab testing supervised by Mark Hurlow



# Intel where?

SLOW-BUT-STEADY EMULATOR'S  
PRICE IS RIGHT

Until recently, if you wanted to run Windows 95 on your Mac without installing a PC-compatibility card, you had exactly one choice — the almost intolerably slow SoftWindows 95 from Insignia Solutions. If you wanted to run OS/2 or Windows NT on your Mac, hardware cards were your only option. Now, thanks to the hardware-emulation gurus at Connectix, there's a cheaper and more flexible route to Windows compatibility. The eagerly awaited Virtual PC 1.0 provides an emulation program that allows you to run PC software on your Mac — albeit slowly — by converting x86 instructions into PowerPC instructions on the fly.

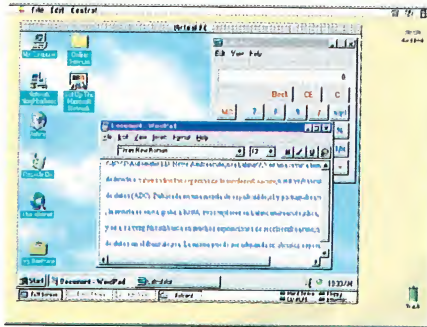
Because Virtual PC mimics an Intel Pentium PC with MMX capabilities, it supports any operating system that runs on the Intel Triton chipset — including Windows NT, OS/2, and OpenStep (Insignia Solutions' products, by comparison, are OS-specific). The program comes bundled with your choice of Windows 95, or Windows 3.1 and DOS. Like SoftWindows 95, Virtual PC allows you to access Mac peripherals from within PC applications.

Virtual PC is about \$70 cheaper than SoftWindows 95, even after drastic price cuts (see Product Update). It's also easier to install and configure, but it has steeper system requirements: Connectix recommends a PowerPC 604 or 604e chip, or a 603e chip running at 180MHz or faster.

Even on fast hardware, though, Virtual PC's speed is disappointing. Although the program offers excellent compatibility with PC software, it's not noticeably faster than SoftWindows. In fact, in some of our speed tests on a Power Macintosh 7300/200, Virtual PC ran slower than SoftWindows 95 4.0 (see "Virtual PC's speeds on par with

SoftWindows"). Macworld Lab also spotted Virtual PC on a 601-based 7500/100 (which Connectix doesn't support) and found that it ran consistently slower than SoftWindows 95 on that machine.

Connectix advises that performance is improved on machines with at least a 512K cache, a recommendation borne out by our testing, although not indicated in the table. Informally, we found that the larger the cache, the better Virtual PC performed.



**Windows in a window** Virtual PC lets you fill your entire screen with Windows 95, or run it in a Mac OS window

Virtual PC is easier to set up and less cumbersome than SoftWindows 95. SoftWindows requires you to tinker with memory settings in the program's Preferences to optimise performance. With Virtual PC, you simply assign more memory to the program using Get Info, and Virtual PC takes care of optimising the allocated memory for maximum performance. (Boosting RAM allocation from 22Mb to 30Mb produced a noticeable improvement in performance.)

Setting up shared folders between the Mac and PC environments is also more straightforward with Virtual PC. Accessing PC files from your Mac is particularly easy; when you double-click on a Virtual PC hard-drive icon — the virtual PC hard drive on your Mac — it actually mounts on the Mac desktop, just like any other disk.

Like SoftWindows 95, Virtual PC offers a quick-start feature that saves a snapshot of the current PC environment when you quit. You can run Virtual PC within a window on the Mac desktop or in full-screen mode. It's easy to swap between the two views; pressing the key makes Virtual PC's menu bar appear whenever you need it. Unfortunately, Virtual PC doesn't allow you to copy and paste from PC programs to Mac applications — something SoftWindows does quite well. You can, however, copy and paste from Mac to Windows.

## The last word

Anyone who's serious about running PC applications on a Mac — particularly games and multimedia titles — should probably bypass both Virtual PC and SoftWindows and spring for a PC-compatibility card from Apple or Orange Micro. For users who occasionally need to run PC programs without steep speed requirements, or for those who want to experiment with other operating systems, Virtual PC is a viable, low-cost solution — and a better deal than SoftWindows.

— JOSEPH SCHORR



## Virtual PC

**Application:** Intel Triton chipset emulator

**Min. requirement:** [Windows 95] 180MHz PowerPC 603e processor or greater; System 7.5.5 or greater; 24Mb RAM (32Mb recommended); 150Mb hard disk space (300Mb recommended). [Windows 3.11/MS-DOS] 100MHz PowerPC processor or greater; 20Mb RAM (24Mb recommended); 100Mb hard disk space (200Mb recommended)

**Source:** Connectix  
<http://www.connectix.com>

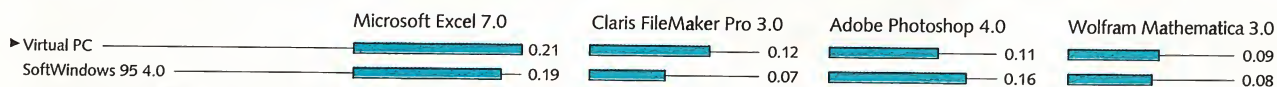
**Distributor:** Firmware Design,  
(047) 21 7211

**Price:** \$299



## Virtual PC's speeds on par with SoftWindows'

Longer bars are better. Results are times as fast as a Sony PCV-120 200MHz Pentium MMX PC (Pentium 200 = 1.0). ▶ New product.



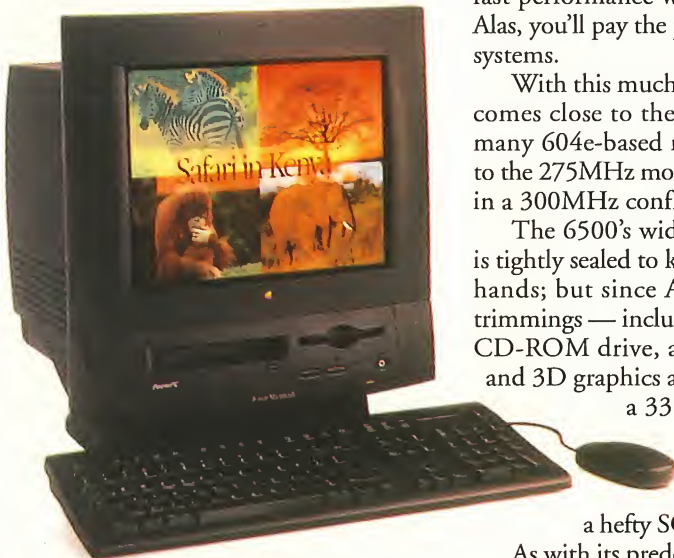
### Behind our tests

Both products tested on a Power Macintosh 7300/200. — Macworld Lab testing supervised by Matt Clark



## M.I.B.

MACS IN BLACK MAKE  
THE GRADE



Apple's new Power Macs are no bargain, but they do sport superfast CPUs hidden inside a multimedia-packed tower for small office/home office users and an all-in-one configuration for schools. The Power Macintosh 6500 and 5500 both offer blazingly fast performance with all the necessities. Alas, you'll pay the price for these hot new systems.

With this much horsepower, the 6500 comes close to the performance level of many 604e-based machines. In addition to the 275MHz model, the 6500 also ships in a 300MHz configuration

The 6500's wide, round-edged tower is tightly sealed to keep out curious young hands; but since Apple includes all the trimmings — including a Zip drive, a 12x CD-ROM drive, a 4Gb hard drive, 2D and 3D graphics accelerator boards, and

a 33.6Kbit/sec modem — there's little reason to pry it open. Apple also includes a hefty SOHO software bundle. As with its predecessor, the Power Mac

6400, advanced multimedia capabilities complement this home machine's plush features. The 6500 also adds new built-in video and video-out capabilities. To boost performance, Apple includes 48Mb of RAM and 256K of secondary cache. Apple intends the 6500 to be a self-contained box with minimal upgradability — it sports just a single serial port and two free (but nearly impossible-to-reach) PCI slots, and no externally accessible drive bays.

Like the 6400, the 6500's tower casing incorporates a subwoofer for that "big" multimedia sound. The space required for the subwoofer comes at the expense of extra expandability (more PCI slots or drive bays), but with all the goodies Apple has included, there is little reason to add more. Besides, Apple believes, people who buy computers in this bracket of the market rarely expand their computers anyway.

The Power Macintosh 5500/250 — the 6500's all-in-one counterpart — provides a dramatic boost to the education market's offerings. This compact desktop with an integrated 15in monitor breaks

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America Online	✓	✓	PowerPoint	✓	✓
Canvas	✓	✓	Premiere	✓	✓
Claris Works	✓	✓	QuarkXPress	✓	✓
CompuServe	✓	✓	Quicken	✓	✓
CorelDRAW	✓	✓	QuickTime	✓	✓
Design & Layout	✓	✓	SuperPaint	✓	✓
Desktop to Pre-Press	✓	✓	Troubleshooting	✓	✓
Digital Chisel	✓	✓	Utilities, CDEVs & Initi	✓	✓
Director	✓	✓	Windows Basics	✓	✓
Excel	✓	✓	Word	✓	✓
FileMaker Pro	✓	✓	WordPerfect	✓	✓
Fonts	✓	✓	ACCESSORIES	✓	✓
FreeHand	✓	✓	10 Secrets	✓	✓
HyperCard	✓	✓	Color Projection	✓	✓
Illustrator	✓	✓	Products	✓	✓
Infini-D	✓	✓	Financial Aid	✓	✓
Integrating	✓	✓	Legal Aid	✓	✓
Programs	✓	✓	PhotoDisc CD	✓	✓
Internet	✓	✓			
Lotus 1-2-3	✓	✓			
Macintosh 7.1	✓	✓			
Macintosh 7.5	✓	✓			
MacProject Pro	✓	✓			
MacTools Pro	✓	✓			
MacWrite Pro	✓	✓			
Microsoft Works	✓	✓			
MiniCad 5	✓	✓			
Networking	✓	✓			
Nisus Writer	✓	✓			
Norton Utilities	✓	✓			
Now Contact	✓	✓			
Now Up.to.Date	✓	✓			
Now Utilities	✓	✓			
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speed barriers — its 250MHz 603e chip dramatically outperforms similarly configured systems.

To integrate multimedia into the classroom experience, Apple includes a 12x CD-ROM drive, stereo sound, 2D and 3D acceleration, and Internet-access software. Additional goodies include video-out capability for TV connection, and a built-in video card that enables classrooms to record video from video cameras, VCRs, and laser discs.

Adding to the "funky" value of the 5500 is its black (sorry, "graphite") enclosure, similar to the Performa 5400 Director's Edition. Apple could be well advised to expand the number of machines it releases in black casings (let's face it, it's black) to include some towers and maybe a monitor or two.

### The last word

Some Power Mac 6500 and 5500 users have reported problems with video images, cache, and software installation. Even after Apple resolves these problems, you'll still want to consider your options

— and your finances — before choosing the powerful Power Mac 6500/275. You can save almost \$800 with an upgradable, similarly configured PowerBase 240, and although you won't get the same incredible performance of the 6500/250, your wallet won't feel so empty. The 5500/275, however, is a dream for educators hunting for a new system. Affordably priced and well-equipped, the 5500 goes straight to the head of the class.

— ALLYSON BATES

i

## Power Macintosh 5500 & 6500

**Source:** Apple Computer  
<http://www.apple.com>

**Distributor:** Apple Australia  
<http://www.apple.com.au>

**Phone:** 1800 025 355

**Price:** 5500/250 — \$3995;  
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# NEW QuicKeys 3.5

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"In our search for the perfect wizards...some of the choices were no brainers; CE Software's QuicKeys, for example, is the hands-down winner if you're looking for an easy way to automate repetitive tasks..."

MacWorld Magazine June, 1996 **MW ★★★★★** QuicKeys 3.0

**W**hy? New QuicKeys® 3.5 makes automated shortcuts—the kind that save you valuable time—in all the applications you use every day. Whether you live in Quark®, Photoshop®, Freehand®, FileMaker®, or all of the above, you'll find QuicKeys is an indispensable daily productivity boost.

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- ... set up batch sequences for hands-free optimisation of web graphics.
- ... re-format a year's worth of spreadsheets with the touch of an F-key.
- ... and much more!

The automation power of QuicKeys is limited only by your imagination.

**Setting up is a breeze**—no complex scripting or cryptic programming is required. QuicKeys 3.5 is loaded with new features to satisfy even the hungriest power users, too. Batch processing transforms any application into an automated production factory. Three kinds of customisable toolbars give you one-click visual access to automated tasks. Improved editing capabilities make it easy to record, edit, and even share shortcuts. Whatever you do with your Mac, you'll do it faster and smarter with QuicKeys.

For more  
QuicKeys  
Information



Contact

# CONEXUS

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## Technicolour dream

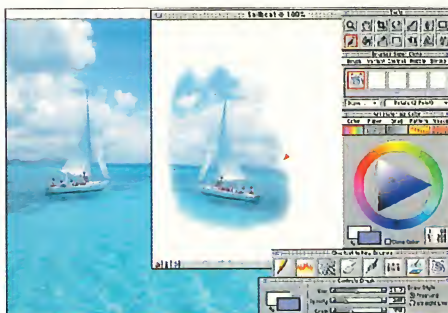
UPGRADE TOUCHES UP INTERFACE AND ARCHITECTURE

**P**ainter 4, with its excellent emulation of natural-media techniques and innovative digital brushes, is a tough act to follow. But MetaCreations has done it: Painter 5 is better than ever. The new version introduces an extended plug-in architecture, dynamic floaters (layers), more than 100 new brushes, selection and masking tools that conform to industry standards, and a more versatile interface. It also includes the Kodak Color Management System and supports both CMYK and Hexachrome output.

But despite all the changes, Painter is still Painter. Veteran users will find themselves on familiar ground, and novices still face a significant learning curve on the road to proficiency. But nothing worth attaining is easy, and Painter 5 is definitely worth the effort.

### Torn between two brushes

When Painter 3 did away with the ability to tear off individual brush variants, I mourned. Painter 5 not only restores this feature but improves it: the new version lets



**Transforming the clones** Painter 5's Super-Cloning brushes can rotate, scale, shear, and otherwise transform an image.

Here, the brushed-on clone is slightly rotated and mirrors the source image

you collect both tools and menu commands into user-definable palettes. That means you can keep your favourite pencils, air-brushes, and erasers close at hand, just as you would on a real drawing table — a ter-

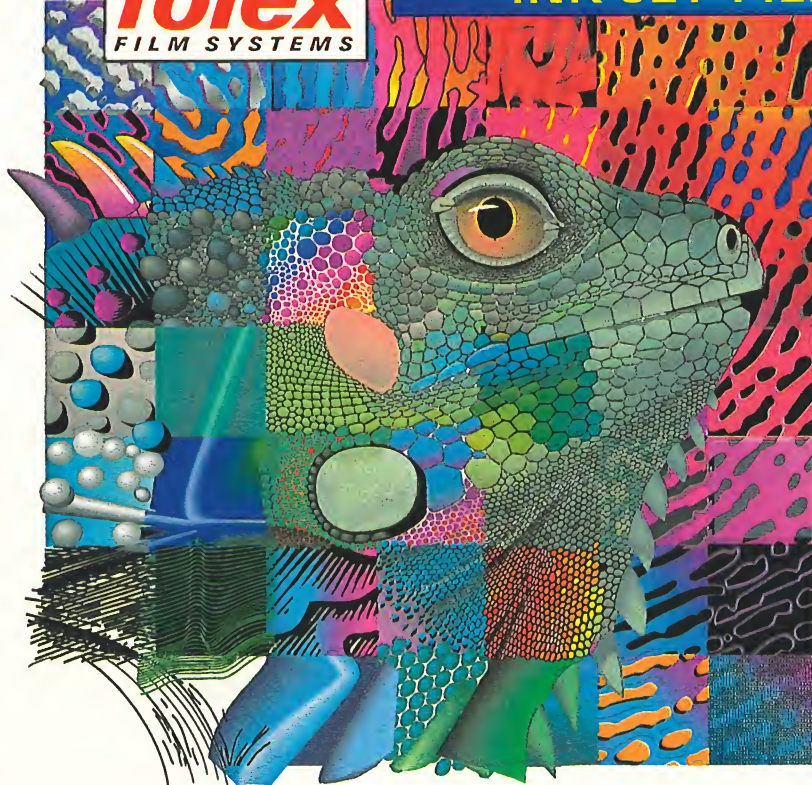
rific improvement that addresses how artists really work.

Among Painter 5's new brushes are one that paints in the style of John Singer Sargent; brushes that let you twist and pull colours across an image and paint on transparent layers, similar to working on glass or acetate; Super F/X brushes that apply glows and flames; and Super-Cloning brushes that transform an image as you clone it. New Photo brushes let you paint with individual colour components (such as hue and saturation) and brush on imaging-filter effects (such as Blur, Sharpen, Dodge, and Burn). Unlike filters that work on entire images or selections, these brushes let you apply the effect only where you want it. Painter 5's new Dynamic Plug-in Floaters produce user-definable and -modifiable effects on a floating selection or on the image area beneath the selection. One dynamic floater applies glass distortions, blurring image elements directly underneath — when you move the floater, the distortion moves with it. If you save the image in Painter's native RIFF format, you can return

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to change the floater's location and blurring parameters. Other dynamic floaters burn and tear selection edges, adjust the image (with Brightness/Contrast, Equalize, and Posterize options), paint with liquid-metallic blobs, and bevel edges — a great way to create Web-page and multimedia buttons.

### New selection tools

Painter's powerful but offbeat selection tools have long confused users and irritated professionals who regularly switch among programs during projects. New with version 5 are selection tools (marquee and lasso) that adhere to Mac conventions. Adding to a selection now takes a simple shift-click; earlier versions' misguided Controls Palette buttons are gone. Painter can still transform a pen-drawn Shape object into a selection definition, letting you select odd-shaped areas and edit selection boundaries more precisely. The long-overdue selection-tool changes make Painter more accessible to novices and more useful for everyone.

Painter 5's handling of masks (alpha channels) now better conforms to Photoshop practice. It can save as many as 32 user-defined masks with each document; when you import images into Photoshop, saved masks correspond to channels #4 and higher (up to Photoshop's 24-channel limit), and the channels of imported Photoshop images appear in Painter's Mask List palette. Similarly, Painter's image floaters correspond to Photoshop layers and Painter's Shapes to Photoshop paths.

The manual is thorough and well organised, but it's hefty enough to frighten the faint of heart. Less daunting is the tutorial, which provides an excellent introduction to the program. The Painter CD contains lots of examples to help you plumb Painter's depths — predefined floaters, scripts, lighting designs, selection definitions, and interface sets — along with additional brushes, Image Hose nozzles, paper textures, weaves, patterns, colour gradations, and colour palettes.

### The last word

Painter 5 is complicated and demanding to learn; then again, so are traditional art techniques. As with colour on canvas, novices can start painting right away, learning the program's nuances as they gain experience. The payoff for persistence is mastery of an outstanding graphics tool.

— CARLOS DOMINGO MARTINEZ



### Painter 5

**Application:** Natural media illustration program

**Min. requirement:** PowerPC processor; System 7.5 or greater; 12Mb application RAM (20Mb recommended); 20Mb hard disk space

**Source:** MetaCreations

<http://www.metacreations.com>

**Distributor:** Tech Pacific,  
(02) 9697 8666

**Price:** \$649

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## Back with a vengeance

CLASSIC RELATIONAL DATABASE DOES WINDOWS AND THE WEB

**L**eapfrogging from version 3.5 to version 6.0, ACI US's relational database has received its most significant upgrade in nearly a decade. Version 6.0 adapts 4th Dimension (4D) to the world of cross-platform and Web-oriented computing: it generates database code for Windows 95 and NT as well as the Mac, and it automatically converts 4D forms to HTML. The resulting product is easier to program quickly than large-scale SQL-for-the-Mac powerhouses, such as PowerSoft's PowerBuilder, but more powerful and programmable than small-office favourites such as Claris FileMaker Pro.

Buttressed up 4D's design environment is easier to use than this profusion of icons would suggest

Among version 6.0's enhancements are an advanced forms wizard and a better-designed debugger window for watching object and table methods execute. The new

HTML capabilities and internal server mean clients can use a Web browser for easy access to 4D's powerful searching and reporting tools, and site managers can

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update the databases with minimal effort (all changes to 4D forms appear immediately in the HTML representation). Version 6.0 also incorporates the server parts of 4D Web SmartServer, a collection of forms utilities, Web interface builders, and server functions. For additional Web-specific tasks, Foresight's (<http://www.fsti.com>) NetLink/4D handles the details of CGI and Java interfaces; Pacific Data Management's (<http://www.pdm-inc.com>) PDM Internet Tools supports SMTP, FTP, POP3, and low-level TCP/IP calls.

Because 4D generates browser-readable HTML forms and allows standard Web browsers to manage basic TCP/IP access automatically, you can make 4D your Web server simply by choosing that option from a menu. A collection of examples shows you how to add jiggling graphics and other popular home-page features to your otherwise highly professional database presentation.

If you already have a 4D database and a bit of forms-design practice, you can create a satisfactory Web site based on your existing files in a day. Since version 6 makes all your existing database forms

accessible from the site, all you have to do is decide what's public and what's private. ACI US has pulled off the database-architecture feat of making users accessing 4D from the Web look like just another type of client, without sacrificing 4D's power as a Mac database or its easy links to mini-computers and mainframes.

Longtime 4D users will feel right at home in this expanded environment — plug-ins, extensions, and add-on packages are a hallmark of ACI's approach — but the scope of the options developed over 4D's history can be overwhelming compared with the relative simplicity of FileMaker Pro. And 4D's Web functions can be difficult to master, though the examples and hand-holding make key tasks easier than in, say, FileMaker Pro using EveryWare's Tango. But an extensive tutorial makes the learning curve easier, and at the end lies a heavy-duty database with security, excellent relational-design integrity, and serious transaction handling.

#### The last word

The complete 4D show — which includes the older 4D Calc, 4D Write, and 4D

Draw along with the new Windows-aware SDK — can cost several thousand dollars, but the basic version is at its lowest price ever. (The just-released 4D Desktop, which bundles 4D Compiler and the 4D Insider tool kit, is priced at \$795.) 4D 6.0 is the clear Mac choice for businesses that need both access to huge databases and a reliable Web setup.

— CHARLES SEITER



### 4th Dimension 6.0

**Application:** Cross-platform relational database program

**Min. requirement:** 680x0 processor; system 7.1 or greater; 6Mb RAM (8Mb for PowerPC)

**Source:** Analyses Conseils Information (ACI) (<http://www.aci.fr>)

**Distributor:** Namadgi Corporation  
<http://www.namadgi.com.au>  
(02) 6285 4384

**Price:** \$475; Desktop version: \$795

## New Mac Entertainment Titles from Try & Byte

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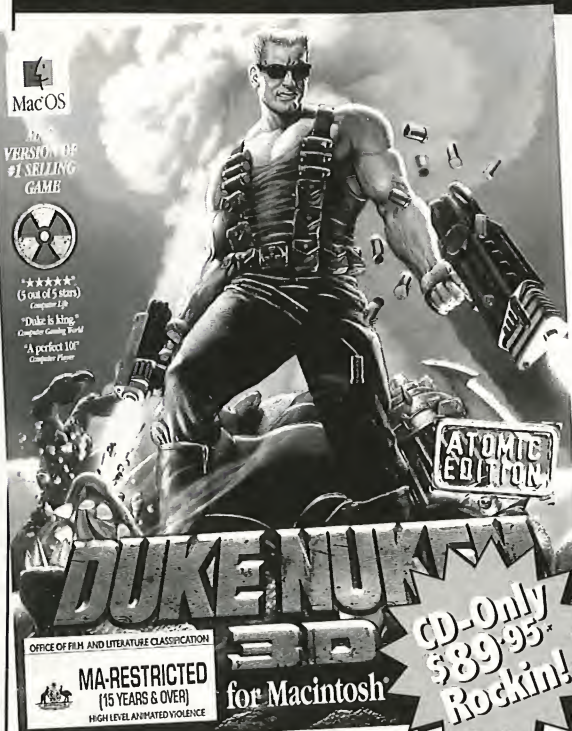
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# Web migration

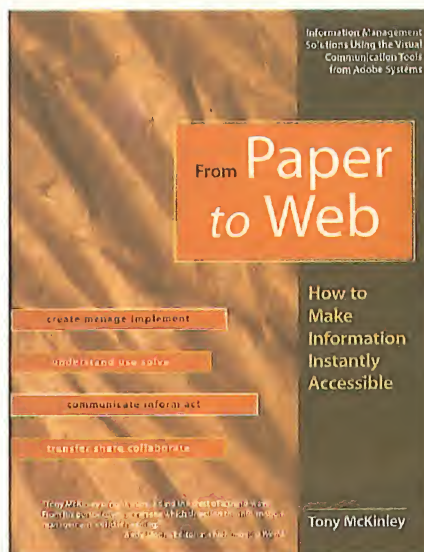
MOVING DOCUMENTS TO ELECTRONIC FORMAT CAN BE FUN

**F**rom Paper to Web very usefully combines an overview of information management and electronic publishing with practical advice about using Adobe Acrobat and related products.

Author Tom McKinley's background in OCR shows up in the early chapters concerned with moving existing information from paper into electronic form, but he soon goes on to the issue of "making digital documents better than paper".

There are various aspects to this, such as production cost and speed of delivery, but accessibility is the most important. Electronic documents are fully searchable, though there's still a place for indexing and a need to know about search tools (which are covered in detail from the perspective of finding the information you want and of other people finding your material). In addition to the document

itself, PDF files carry meta-information, including who created them and when, plus any keywords associated with the content, further enhancing the retrieval process. Acrobat integrates closely with Web browsers, so a couple of chapters are devoted to HTML issues, including PageMill.



Unfortunately, the book seems designed for short-term eye appeal rather than long-term reading ease. The main typeface is superficially attractive but tiring during serious study, and the combination of a creamy paper and the yellow-orange ink used for the inline glossary and some other material is hard to read, especially under fluorescent light.

## The last word

It's a worthwhile book, but if Acrobat is the way to make information instantly accessible, why isn't there an accompanying PDF edition on CD-ROM?

— STEPHEN WITHERS

## From Paper to Web

**Author:** Tony McKinley

**ISBN:** 1-56830-345-9

**Source:** Adobe/Macmillan

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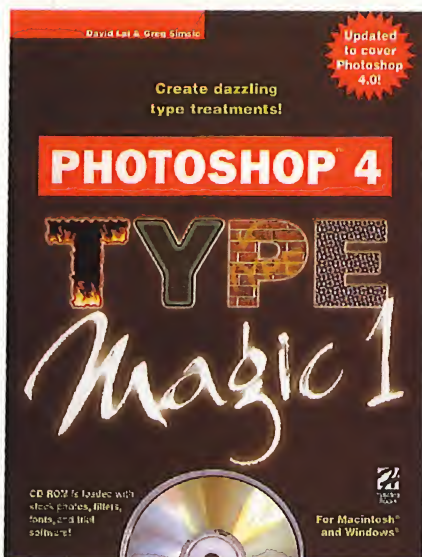
# Text as graphics

MAKE YOUR WORDS STAND OUT

It's easy to be cynical when a blurb promises, "Now you can easily create spectacular type effects like those of the masters," but Photoshop 4 Type Magic 1 actually delivers. Admittedly, I didn't test every one of the 45 effects it presents, but all that I did try worked smoothly and gave good results. Enough information and suggestions are provided to allow relatively unskilled users to vary the techniques to suit different situations. The book claims to be suitable for everyone from new users to experts; this claim is justifiable as beginners are offered an introductory chapter that provides sufficient background to follow the remaining instructions.

The styles presented include rubber stamps, clouds and smoke, liquid, even writing in wet cement. These effects are achieved with Photoshop's own toolset, but alternative approaches using third-party

plug-ins and other software are also presented. Demo versions of these products are provided on the accompanying CD-ROM, along with stock photos and fonts, although not all the fonts featured in the book — notably VAG Rounded — are included.

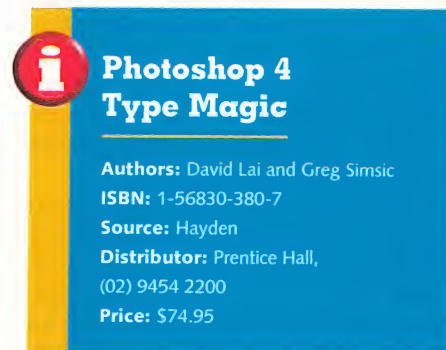


The book itself is well designed. A visual thumb index provides quick access to sections, and step-by-step screen shots relate the instructions to what you see on your monitor.

## The last word

Don't be put off by the relatively high price for a slim (approximately 250 pages) volume. There's good value here if you want or need to create type effects in Photoshop 4.

— STEPHEN WITHERS



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# Weird Science

## REAL CHEMISTRY ON THE MAC

**W**avefunction's MacSpartan Plus, a molecular modelling program that lets chemists interpret chemical properties visually on a Mac, has arrived just in time to help introduce a whole new field. Combinatorial chemistry, a new twist on traditional organic chemistry, links smaller organic molecules in random combinations to make up thousands of trial molecules, then tests these huge collections for pharmaceutical activity. This relatively young method has dramatically increased the demand for software that allows convenient desktop molecular modelling and calculation of molecular properties.

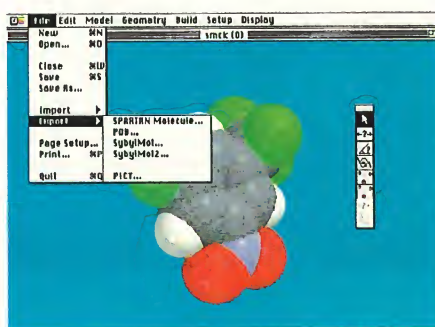
MacSpartan Plus 1.1 is the best program for understanding both combinatorial and traditional chemistry. This powerful software creates 3D pictures that show calculated charge distribution and other fundamental properties that used to require a Unix-based scientific workstation. MacSpartan has basic molecular-mechanics capabilities comparable to those of modelling packages associated with chemical databases; it also yields files that are compatible with other programs.

But MacSpartan goes beyond basic parameter-based modelling, to include several more powerful primary methods; two of these methods are semiempirical calculation of orbitals and ab initio calculation of molecular wave functions. This set of calculations has enough power to predict how some molecules will react to generate superb classroom graphics of orbital models for ground states and excited states, and to investigate the activity of powerful new combinatorial drugs. For calculating small property differences between very similar molecules, the fundamental issue in much of combinatorial chemistry, MacSpartan is the best commercial Mac package available.

Using MacSpartan for research on molecules with a few hundred atoms demands a 200MHz or faster Power Mac. In the scientific computing market, that's not much of a drawback — just a few years ago *ab initio* and other research-level computations were typically done using a Cray supercomputer, and the Mac produces better graphics than old supercomputers.

## The last word

For research or teaching, MacSpartan Plus does a great job of integrating computation and graphics. On a new, high-end Mac, this program puts serious computer chemistry in every lab. — CHARLES SEYTER



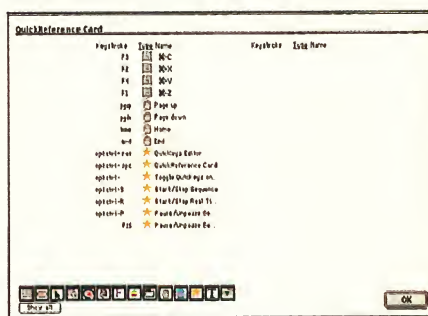
**Molecules everywhere** MacSpartan can exchange information with other molecular modelling software, both simple and advanced

## Key changes

## UPDATE ADDS NATIVE POWERPC SPEED

For efficiency fans everywhere, the release of CE Software's QuicKeys 3.5.2 is welcome news. To the floating tool bars and revamped interface of QuicKeys 3.5, this update adds native PowerPC code, filling a gaping hole in the feature list. The increased speed varies by Mac model; overall, though, the acceleration is small but noticeable, in both executing and editing macros. Even if your Mac isn't PowerPC based, you'll appreciate the bug quashes, including compatibility fixes for Adobe Photoshop and Kensington trackballs. Best of all, this update is free; QuicKeys 3.5 owners can download the updater from CE's Web site.

Despite these improvements, however, this update doesn't advance QuicKeys' overall usefulness. First, version 3.5's weaker fea-



tures haven't been revisited; you can still create tool bars, but the icons still all look alike, and you still can't give them permanent text labels. And although QuickKeys has always excelled at manipulating menus, dialogue boxes, and buttons, exotic interface elements such as tabbed dialogue boxes (as in Microsoft Word 6), floating palettes (in Claris products), contextual pop-up menus (in Navigator), and even title bar-sprouting menus (in Photoshop) often thwart QuickKeys. A tech-support rep told me that CE doesn't recommend using QuickKeys to handle even standard pop-up menus.

## The last word

QuickKeys has more rivals than ever: Westcode's OneClick, Affinity's Tempo II, and Binary's KeyQuencer each outdoes QuickKeys in certain areas. But QuickKeys is still the most direct route to giving your control key and F-keys a purpose. For tasks such as typing your return address, launching programs, or processing Photoshop files, QuickKeys is still a winning, and now faster, software servant. — DAVID POGUE

## QuicKeys 3.5.2

**Application:** Shortcut creation utility  
**Min. requirement:** 68030 processor or greater; System 7.5 or later; 8Mb RAM; 4Mb hard disk space  
**Source:** CE Software  
<http://www.cesoft.com>  
**Distributor:** CoNeXuS, (02) 9975 2799  
**Price:** \$187



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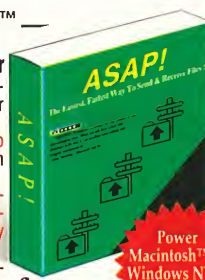
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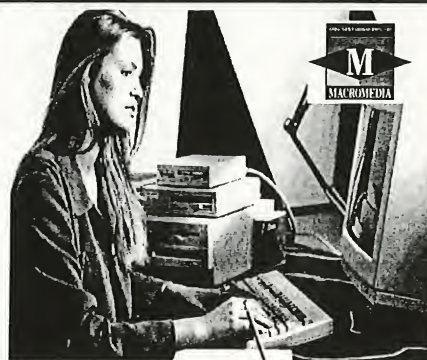
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## ADVERTISERS' INDEX

AAPDA .....	59	MacAcademy .....	56
Apple Computer [Aust.] .....	12-13	Maxwell Optical .....	27
AppleCentre Sydney .....	18-19	Microseconds .....	62
Claris International .....	15	Mitsui Computer .....	IFC, 1
Conexus .....	57	Performance Sales .....	IBC
Connectix .....	16	Power Technologies .....	7
Designwyse .....	2-3	Proscan .....	OBC
Digital Star .....	65	Samsung Electronics .....	9
Epson Australia .....	4	Tektronix .....	60
Fujitsu-Volume Products Group .....	22-23	Try and Byte .....	61
JL Lennard Graphics .....	58	WYSIWYG Design .....	37
Kodak .....	28		

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*Australian Macworld* is printed by Offset Alpine Printers, Lidcombe, NSW 2141.  
Distributed nationally by Gordon & Gotch  
Film produced by Graphus Pty Ltd.



**Australian Macworld** is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 250

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# eMate 300 Competition



## HELP WANTED:

# SIDEKICK

Atomic Mac Woman, Crusader for Justice, Seeker of Truth, Defender of What's Right and Good and So Forth, is seeking an able-bodied assistant (or at least someone who's conscious most of the time) to fulfil the role of Sidekick.

The successful applicant will be experienced in all aspects of good-dude stuff. Duties will include: assisting Atomic Mac Woman in the apprehension of bad dudes; making sure Atomic Mac Woman gets the credit even when you did the neato trick that got the bad dude in the end; and spontaneously producing witty one-liners. The successful applicant will also possess the ability to colour-coordinate with Atomic Mac Woman herself.

Salary will be commensurate with the League of Justice Guidelines, Chapter 4, section 3, as it relates to the compensation of Sidekicks. The position is classified as a Sidekick, Class 2, for the purposes of these Guidelines.

**Standard equipment for Sidekicks is an Apple eMate 300 portable computer, and one is provided with this position. This is a Newton OS-based device with a 25MHz ARM RISC processor, 3Mb of RAM and 8Mb of ROM. Applications include a word processor, drawing program, spreadsheet, graphing calculator, address book and calendar. As well as a keyboard, the eMate allows you to input text and graphics direct to the screen via a stylus.**

**The eMate can be connected to computers based on Mac OS or Windows as well as AppleTalk networks and the Internet. As well as all that, it looks totally funky.**

Mastery of the eMate is essential for a Sidekick in the modern, highly competitive super-hero environment, and on-the-job training will be provided. Applications should be on the form below or a photocopy.

Atomic Mac Woman is an equal opportunity employer, and people who have been given super powers as the result of bizarre scientific experiments gone wrong are encouraged to apply.

### Task 1:

What heroic qualities do you possess that would enable you to assist Atomic Mac Woman in her Crusade for Justice Et Cetera?

### Task 2:

Describe how the unique capabilities of the eMate 300 can best be used to track down and apprehend bad dudes. You may combine these two tasks into one. Entries may be in whatever format you choose. Be as serious or "whacky" as you like.

### Send entries to:

**eMate Competition**  
**Australian Macworld**  
**88 Christie Street,**  
**St Leonards NSW 2065**

**or e-mail:** [macworld@idg.com.au](mailto:macworld@idg.com.au)  
with the subject "eMate Competition"

*Entries must be received before 1700 hours (that's about five-ish in the afternoon) on 12 September 1997. Seriously folks, don't bother after that.*

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# Marketplace

**AMW provides current prices of Mac OS products each month. Prices do not include monitors unless otherwise stated**

**W**ell, the biggest news this month in the Mac OS hardware market would have to be the disappearance from our shores of the PowerTools Infiniti range, distributed here by Mac Source until a few weeks ago. It seems the Mac clone market in Australia, though young, is already a highly competitive market, and it's just too hard for a new player to make enough noise to be noticed. Mitsui's marketing has been aggressive and prominent; Umax releases machines by the tonne, apparently trying to sway the market by sheer weight of numbers; and even Apple has started to show some fight in its advertising, despite pulling out of mass-market retail to concentrate on specialist resellers.

In other news, Umax has expanded its range (again), now including the Super Pulsar range of multi processor machines. The new release brings Umax's tally of models available ahead of Power Computing, and Apple only has more because of its unique position as a provider of notebooks. If and when the clone makers bring out portables, this may have to be a four-page section. By the way: these prices are list prices given to us by the distributors. Word on the street is that almost every machine here can be had for at least a little bit less if you shop around, and we've heard of some very good deals. One more little thing: remember a couple of months ago, we told you you'd be out of luck if you wanted a 20th Anniversary Mac? Well, we don't want to say too much, but we strongly recommend that you read next month's AMW and the one after it. Hint, hint, wink, wink.

## Where to find them

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Daystar Digital	Maxwell Optical	(02) 9390 0200
Umax	Computer Enterprises of Australia	(02) 9957 3476
Motorola	Polaroid Computing	(02) 9950 7060

Manufacturer	Model name	Chassis	CPU
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	Macintosh 6500 (b)	tower	PPC 603e
	Macintosh 6500	tower	PPC 603e
	PowerBook 1400cs	notebook	PPC 603e
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	PowerBook 1400c	notebook	PPC 603e
	PowerBook 1400c	notebook	PPC 603e
	PowerBook 3400c	notebook	PPC 603e
	PowerBook 3400c	notebook	PPC 603e
	Power Macintosh 7220	desktop	PPC 603e
	Power Macintosh 7300	desktop	PPC 604e
	Power Macintosh 7300	desktop	PPC 604e
	Power Macintosh 8600	tower	PPC 604e
	Power Macintosh 9600	tower	PPC 604e
	Power Macintosh 9600	tower	PPC 604e
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300	4Gb	12x	64Mb	128Mb	2	256K	2	64-bit subsystem	4695
117	1Gb	none	12Mb	64Mb	1	none	none	Passive matrix display	2995
133	1.3Gb	6x	16Mb	64Mb	1	none	none	Passive matrix display	4695
133	1.3Gb	6x	16Mb	64Mb	1	none	none	Active matrix display	5695
166	2Gb	6x	16Mb	64Mb	1	none	none	Active matrix display	6995
200	2Gb	6x	16Mb	144Mb	1	256K	none	Active matrix display	8495
240	3Gb	12x	16Mb	144Mb	1	256K	none	Active matrix display	9995
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200	4Gb	12x	32Mb	768Mb	12	512K	6	IMS Twin Turbo 128 (d)	8995
180	2Gb	4x	128Mb	1.5Gb	12	512K	6	ATI card (d)	21574
200	2Gb	4x	128Mb	1.5Gb	12	512K	6	ATI card (d)	22564
180	1.2Gb	8x	16Mb	160Mb	3	256K	3	1Mb DRAM	2763
200	1.2Gb	8x	16Mb	160Mb	3	256K	3	1Mb DRAM	3033
200	1.2Gb	8x	32Mb	160Mb	3	256K	3	1Mb DRAM	3445
240	2.5Gb	8x	32Mb	160Mb	3	256K	5	4Mb DRAM	4352
200	2.5Gb	8x	32Mb	160Mb	3	512K	3	2Mb DRAM	4762
180	1.2Gb IDE	8x	16Mb	160Mb	3	256K	3	2Mb EDO VRAM	2746
200	1.2Gb IDE	8x	16Mb	160Mb	3	256K	3	2Mb EDO VRAM	3022
240	1.2Gb IDE	8x	16Mb	160Mb	3	256K	3	2Mb EDO VRAM	3297
180	2Gb	16x	16Mb	512Mb	4	1Mb	3	2Mb VRAM	4099
180	2Gb	16x	16Mb	512Mb	4	1Mb	3	2Mb VRAM	4399
210	2Gb	16x	16Mb	512Mb	4	1Mb	3	2Mb VRAM	4795
210	2Gb	16x	16Mb	512Mb	4	1Mb	3	2Mb VRAM	4985
200	2Gb AV	8x	32Mb	1Gb	8 (interleaved)	1Mb	6	IMS Twin Turbo 128 (e)	5899
225	2Gb AV	8x	32Mb	1Gb	8 (interleaved)	1Mb	6	IMS Twin Turbo 128 (e)	6870
225	2Gb AV	8x	32Mb	1Gb	8 (interleaved)	1Mb	6	IMS Twin Turbo 128 (e)	10440
180	2.1Gb	8x	16Mb	144Mb	2	256K	3	1Mb VRAM	2079
200	2.1Gb	8x	16Mb	144Mb	2	256K	3	1Mb VRAM	2504
240	2.1Gb	8x	16Mb	144Mb	2	256K	3	1Mb VRAM	2999
200	2.5Gb	12x	32Mb	144Mb	2	512K	3	4Mb VRAM	3621
200	2Gb	8x	16Mb	1040Mb	8	512K	4	Matrox Millenium (c)	4457
225	2Gb	8x	16Mb	1040Mb	8	512K	4	Matrox Millenium (c)	4673
200	2Gb	8x	32Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (d)	5173
225	2Gb	8x	32Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (d)	5412
233	2Gb	8x	32Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (d)	5551
180	4.3Gb	12x	80Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (e)	7684
200	4.3Gb	12x	80Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (e)	8300
233	4.3Gb	12x	80Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (e)	9166
250	4.3Gb	12x	80Mb	1040Mb	8	512K	6	IMS Twin Turbo 128 (e)	9759



**Quick Tips answers  
questions about  
the Macintosh  
and how it  
works**

# Quick Tips

Send tips or questions to: Quick Tips, Australian Macworld, 88 Christie Street,  
St Leonards, NSW 2065; or e-mail [quicktips@idg.com.au](mailto:quicktips@idg.com.au)

**Please include your full postal address. Where appropriate, send screen dumps and program listings (preferably both) on hard copy and disk. No topic is too elementary or too advanced. Discussions range from setting up the Mac to hacking in ResEdit**



**By Rosanne  
Bersten,  
Philip  
Kingsmill  
and  
Matthew  
JC. Powell**

## **Make me, break me**

**Q** Although FileMaker 3.0 is said to be good at mail merge/text functions it's impossible to use the merge-field function adequately for a form letter with an extra "body text" field because there is no way to stop the page breaking across the middle of a line of text on various pages, depending on the size of the merge field and how many pages there are! I've spent many hours trying to make it work and there doesn't seem to be any way to do so.

*Tuly Rosenfel  
via Internet*

**A** The short answer to this question is no. FileMaker simply places the text in an area and if the area falls off the page then only the top half (or whatever fits) of the line appears at the bottom of the page.

However, we don't like saying no, so with a little research we have unearthed some methods of performing what you are trying to do. They are too detailed to print here so they have been posted on our Web site at <http://www.idg.com.au/macworld>. If anyone else has this problem, the solution can be found there, and Quick Tips columns will remain on the Web site in an archive folder.

## **More smaller, more smaller**

**Q** I have a Power Mac and have enjoyed the Connectix QuickCard application. Having com-

posed a QuickCard for my friends, I want to e-mail it as an attachment. Since the size of the attachment is large, I have used various compression programs such as StuffIt and ZipIt before sending the files. Often my friends are unable to receive the files because of the size of the compressed files.

Can you suggest any other compression programs that I should consider or an alternative method to transfer such files? Any thoughts would be much appreciated.

*Bradley Treadwell  
South Yarra Vic*

**A** Stuffing or zipping the files is the best way to go when you transfer them to a friend on the net, but as you say, sometimes they are too big. Each of the programs that you are using has the ability to segment the complete archive (compressed information) into multiple smaller parts.

You may need to check with your ISP as to the maximum size of an attachment for e-mail before you segment the archive as ISPs have different limits. Once your friends receive the segments, they can join them back together and extract the information.

## **Keeping MOM**

**Q** I have a small but irritating problem with my LC Director's Edition Mac. This is my home machine that I use for word processing and e-mail. It has standard

Apple system software, no freeware, and only SAM virus catcher has been added.

The problem is that on shutdown I get the persistent message "Application unknown will not quit" and I have to quit by turning off the power. This problem occurs with each use cycle. During one long working system, a message appeared advising the "Application Unknown" had quit and I was able to shut down normally. I have tried rebuilding the Desktop but to no avail.

*Dean Graetz  
CSIRO Earth  
Observation Centre  
Canberra, ACT*

**A** At best guess you have Microsoft Office installed (or at least Microsoft Word and the Microsoft Office Manager (MOM)). MOM is a faceless application similar to File Sharing. This means that even though it is running, it doesn't appear in the Finder menu. You must access MOM through a control panel.

When the MacOS is instructed to shut down, all of the running applications receive notification that the system is about to shut down. When they receive this notification they are meant to quit gracefully, sometimes bringing up a dialogue box to confirm the quit. Unfortunately, MOM doesn't do this all the time and as the application does not identify itself to the system, the system can only call it an unknown application;



hence the "Application unknown will not quit" message.

The latest version of MOM is 4.2.1c and is available from Microsoft. This version fixes a few bugs but you may still suffer the same problem on shut-down.

Removing the MOM control panel will also fix this problem but you will lose the menu that it installs.

### Bigger isn't best

**Q** I have recently bought a new Mac 7300/180 but am puzzled by the larger file sizes I am getting. For example: a Claris Office WP file which is only 8K on my old Mac 6100/66 and becomes 9K on my old Mac laptop (145B) becomes 64K when I transfer it to the 7300!

This is not an isolated case but happens with every file I have transferred. It happens with application files as well as document files. There is always an increase in file size. The typical increase is about 100 per cent but has been as small as 20 per cent on occasions and is sometimes as large as 400 per cent. What is happening?

*Ross Vining  
Carlingford, NSW*

**A** From what you have said it looks like your 6100 has a 250Mb drive, your 145B has a 260Mb drive (even though it probably shipped with 80Mb) and your 7300 has a 2Gb drive. How do we know this? We rubbed the Magic Toaster and it told us. Seriously.

We could make these guesses due to the way in which the Mac stores its files. Take a deep breath as we are about to use lotsa numbers. The MacOS uses a Hierarchical File System (HFS) to store the files on a hard drive. We need to look at some of the limits of this system before stating why your files get bigger.

- The maximum volume size under System 6 and System 7 is 2 gigabytes. Under System 7.5.1, the maximum is 4 gigabytes and under System 7.5.2 or higher, the maximum increases to 2 terabytes.
- The maximum file size is 2 giga-

bytes. (This is set to change with Mac OS 8.1)

- The maximum number of files on a volume is 65,536.
- The maximum size of the data fork in a file is 2 gigabytes.
- The maximum size of the resource fork in a file is 16Mb.

A volume may be a hard drive or a partition on the hard drive.

You can see that the limits appear quite high. A few years ago they were. Resource forks and Data forks were also mentioned. A Mac OS file always consists of at least one part, or fork, and sometimes two. A text file may consist of a data fork that holds the text of the file. An application file may have a data fork as well as a resource fork. The resource fork holds information like sounds, menus, dialogue boxes and a whole host of other information. Each of the forks gets stored in Allocation Blocks on the hard drive.

An allocation block is a unit of storage on a volume. The maximum number of allocation blocks per volume is 65,536. An Allocation Block may be composed of one or more logical blocks. A logical block is a unit of drive space composed of up to 512 bytes. The larger the volume, the more logical blocks comprise one allocation block.

In both the Macintosh and DOS environments, the maximum number of blocks on a driver is 65,536 because both Operating Systems address the allocation blocks with a 16-bit address. Drives larger than 512Mb cannot use a block size of 8K or less because there just aren't enough addresses. Thus, if a 2Gb drive is one Macintosh partition, the smallest file size allowed is 32K. (If you save a SimpleText file with one character in it, it would take up 32K of disk space). This means that the size of your hard drive determines the minimum size of each file.

A non-empty file fork always occupies at least one allocation block, no matter how many bytes of data the file fork contains. On my hard drive, a SimpleText file with one character in it takes up 33K. The actual file size is 333 bytes. Using the Get Info command in the Finder provides two figures. The

## TIP OF THE MONTH

### Sort of Eudora

In Eudora Pro 3, you can find all the mail you have received from a person by option-clicking any letter you have received from them. Likewise, holding down the option key and clicking on the Date Received field highlights all the mail you received on that date.

*Keith Mording  
via Internet*

first figure is how many bytes or kilobytes the file uses on the disk. The second figure in brackets is the actual size of the file.

\* This explains why your files are increasing in size. If you partition your 2Gb drive to smaller volumes, you will find that the file sizes also get smaller.

### It's a dog

**Q** I have recently upgraded from 7.1 to 7.6.1 at a cost of \$149. I am running an LC 575 and I wonder why I bothered. 7.6.1 is supposed to allow me to run OpenDoc and Cyberdog but no matter how I try I still get the message "This software requires a Power PC" or words to that effect. I have attempted "Clean installs" and can just about rewrite my preferences blindfolded. Please help me.

*Dave Wardell  
Helidon Qld*

**A** Upgrading from 7.1 to 7.6.1 is a good step for any Macintosh owner whose machine has an 030 processor or higher. The better virtual memory and features such as Apple Menu Items make it a much nicer place to work. Unfortunately, not all of the new items can run on 030 or 040 Macs due to a problem with the 68K-Code Fragment Manager. This applies to v1.1.2 of OpenDoc that ships on the 7.6.1 CD. As OpenDoc is the basis of Cyberdog you cannot install Cyberdog.

There is good news. Version 1.2 of Cyberdog will install on your LC575. It can be obtained at <http://www.opendoc.apple.com/users/getod.html>



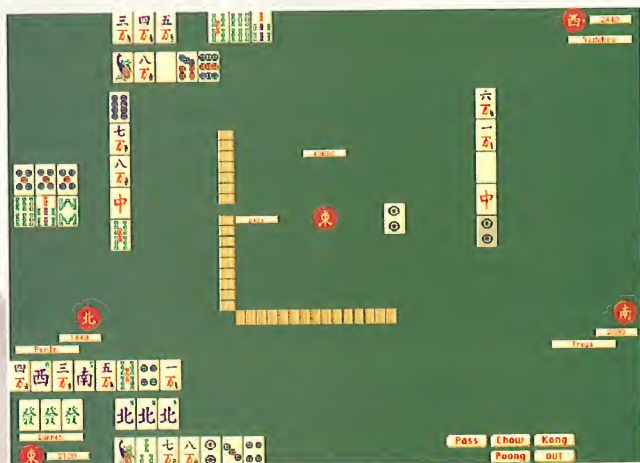
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# Joy of Mac



## MAH JONG PARLOUR



This is a "real" game of Mah Jong, unlike Shanghai and its variants which use the Mah Jong tiles in a modern solitaire game. Mah Jong devotees have been longing for a game like this, since it is often difficult to get the four required players together.

Beginners too will benefit from this product. Unfortunately, it provides no interactive, but there is an Apple Guide help system and online manual.

The most complex parts of Mah Jong are the seating of the players, the selection of the first player and the "breaking of the wall" — all of these ritual parts of the game are automated in this computer version, leaving the player to concentrate on the main play. The other difficult aspect of the game — the scoring which takes place after each hand — is also automated.

Mah Jong Parlour follows the Japan Mah Jong Association rules, which some argue is the "purest" rule-set. Although Mah Jong Parlour does include the option of two minor variations, it does not offer the Chinese or any other version of the game.

All in all, Mah Jong Parlour is not particularly flexible and lacks the bells and whistles offered by, say, Macintosh chess games. For instance, there is basically only one set of tile graphics and no ability to swap players. But in creating a game for a market with no competitors, the creators of Mah Jong Parlour probably felt advanced features unnecessary. However, they have offered three skill levels of computer opponent and multiplayer games over AppleTalk or the Internet.

**Rating:** ★★★ **RRP:** \$89.95 **Source:** Aspyr Media  
**Distributor:** Try & Byte **Requires:** 68000 or PPC; CD-ROM  
<http://www.aspyr.com/Products.html>

## Downloaded

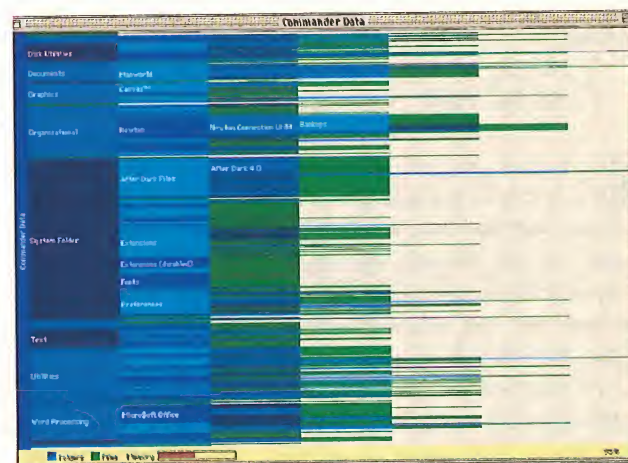
Where, oh where, has my disk space gone? Why does a two gigabyte hard drive suddenly have three megabytes available? DiskSurveyor maps out your drive so that you can quickly spot which files or folders are hogging that valuable space.

The application rapidly scans any volume or folder and presents a colour-coded display which shows the folders and files occupying your disk space. You can click on any folder to zoom in to any level of the hierarchy.

The shareware DiskSurveyor provides a remarkable way of graphically investigating wasted space and is useful for freeing up those wanted megabytes before installing new programs or conducting a backup.

DiskSurveyor also contains a little Easter egg: whenever it displays a file or folder containing "Microsoft", it turns the "s" into a dollar sign.

**Shareware:** \$US10. **Source:** TwiLight Software  
<http://members.aol.com/TwiLightSW>



## Contacting the Joy of Mac

The Joy of Mac is constantly searching for entertaining Mac-related tidbits. If you are the first to send us something which fits this description and which we publish, we will reward you with a prize. Our e-mail address is [joyofmac@idg.com.au](mailto:joyofmac@idg.com.au) and our postal address is Joy of Mac, PO Box 3121, Bellevue Hill NSW 2023. If we receive your e-mail submission, you'll receive an automated response within a day or two.

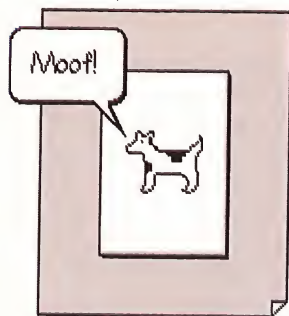
We recommend you read the Joy of Mac FAQ (Frequently Asked Questions) before making a submission. The Joy of Mac FAQ is available for download from <http://www.idg.com.au/macworld>. If e-mailing a screenshot (for instance, a "Love that Interface"), please submit it in a StuffIt or other archive and remember to include a text file with your name and postal address plus a description of the screenshot.



# Moofing Like

LaserWriter 8 Page Setup

Page Attributes



a Dogcow

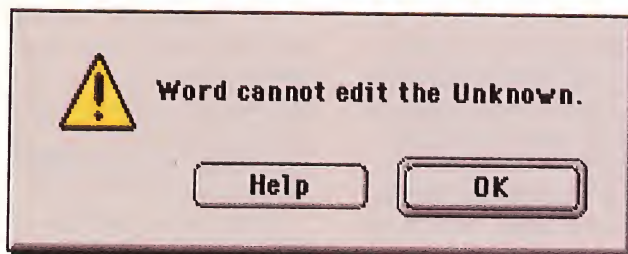
One of the more distinctive symbols of Macintosh culture is a strange beast known as the "dogcow". With a pedigree which can be traced back to the original dog character from the hieroglyphic Cairo font, the dogcow first appeared in the LaserWriter Page Setup dialogue box where she can still be seen today.

In reality, the dogcow was just the Cairo dog resized and redrawn to fit the Page Setup dialogue box. But a legend grew around this icon. According to this legend, people weren't sure whether this little mascot was a dog or cow, with all of Apple firmly split into two factions, either claiming it was a dog or a cow. A compromise was finally reached: it was both — it was a dogcow.

The dogcow was soon named — Clarus — and soon given a voice: it went "moof" (a cross between a woof and a moo). As Clarus entered Mac culture as an icon (in both senses), even developers' technical notes were written about her.

If you are interested in learning more about the origin of the dogcow (and the real story behind the legend), then visit the "Moof in Mind" Web site at <http://thor.he.net/~stories/moof.html>.

## LOVE THAT INTERFACE



Even Microsoft products don't have power over the supernatural. This is clearly evident from this dialogue box, sent in by Greg Pennefather of Fremantle WA.

Greg was trying to edit a graphics object in a Rich Text Format file imported from Word 97 for Windows. Word 6 for Macintosh was not quite sure what to make of it.

For submitting this "Love that Interface", Greg has won QuickKeys from Conexus.



## Last Express



Jordan Mechner's long awaited follow-up to his successful Prince of Persia duo is entirely different to his earlier efforts. Rather than an action game, Jordan has produced a period adventure game that incorporates several innovations.

It's July 1914 and, as Europe teeters towards war, the Orient Express is about to embark on what may be its last voyage. Playing the role of the fugitive, American Dr Robert Cath, you receive an urgent telegram from your friend, Tyler Whitney, imploring you to join him aboard the luxurious train on its pilgrimage from Paris to Constantinople. Shortly after jumping on board, you discover Whitney dead in his compartment. This may not be Agatha Christie, but there has been a murder on the Orient Express.

The plot of this thriller requires you to identify who murdered Whitney and why he was murdered, as your own intriguing past is simultaneously revealed. Your fellow travellers include revolutionaries, aristocrats and undercover agents, representing a microcosm of Europe on the boil.


The Last Express employs an unusual look, inspired by the art of Toulouse-Lautrec. The developers took live-action footage and then painted it as a rotoscoped cartoon. The game lacks the full motion video typically employed by today's adventures. Although some will be disappointed by The Last Express's deliberate stop/start feel, the partial animation is generally quite effective.

The game interface is inventively simple. The trial and error approach often used by many inventory-based games has been replaced with a context sensitive system. If your inventory includes an item which is appropriate to use or to offer to a particular character at a given time, then you'll automatically hold that item.

The Last Express is a real-time game and, to some extent, characters will continue to go about their business as they would even if you were not there. Accordingly, the timing of your movements is just as crucial as what you do. For instance, many times you break in to another passenger's compartment while either the conductor is away from his post or someone is blocking his view.

A game clock allows you to move back in time if you make a mistake or you wish to try a different strategy: just wind the hands back. Similarly, if the game prematurely ends because of your actions, you'll be transported back to just before you made your mistake. This is considerably more attractive than the standard save game routine used by other adventures.

The ingenious game clock is probably The Last Express's main weakness. Too many of the puzzles entail being in the right place at the right time. Nevertheless, this three disc oeuvre, with its large cast and superb attention to detail, is a tour de force.

**Rating:**  **RRP:** \$79.95 **Source:** Smoking Car Productions/Brøderbund **Distributor:** Dataflow **Requires:** PPC; 13" monitor; Thousands of colours; CD-ROM  
<http://www.lastexpress.com>





I am told that Apple dumped Gil Amelio because the board of directors felt they needed to stop speculation about the viability of the company. Well, I can certainly see how that has worked. Now that Gil's gone, everyone seems pretty happy with the way things are going, and the market is finally one hundred per cent confident that Apple will survive.

Wrong! Thanks for playing. Hope you enjoy this lovely keyring encrusted with splinters of cubic zirconia and blue glass.

Since the departure of Amelio and Ellen Hancock, there has been little but pessimism about the future of Apple. Sure, the stock price went up on the strength of rumours about Steve Jobs becoming chairman or even CEO, but Wall Street knows nothing. Wall Street rises and falls on the strength of rumours and innuendo. Run a company like that, and you go broke.

Steve Jobs has been visibly and publicly running the company to his own agenda since Amelio left, without making any public statement on whether or not he is doing so officially. (This is being written before the Boston Macworld Expo, and he may make an announcement there.) It seems that, while there is no officially appointed CEO or Chairman of the board for him to answer to, Jobs has no adult supervision whatsoever. If he were there to steady the ship and keep it going smoothly through the transition, I would be happy with his stewardship. Instead, he has been radically altering the company's agenda and strategies. Any incoming CEO will no longer be able to build on Amelio's good work, but will

have to regain stability after the roller-coaster that is CEO of Pixar.

For instance, I hear that Apple may or may not have decided to stop licensing the Mac OS. By the time you read this a decision will almost certainly have been announced. As I write this, I honestly don't know what Apple intends to do.

I do know this: if I were to compile a list of the top ten bonehead things Apple could do right now, stopping the licensing program would be number one. If I were to go back over the past couple of years and find all the good press Apple has received, I would see that most of it has been about the clones. In a market that has done little but shrink, anything that even looks like growth has to be a good thing, and the Mac OS licensees have visibly and rapidly grown. By letting the Mac OS have an identity of its own that is not totally and completely tied to Apple, the company has restored just a little bit of faith in the platform.

## WHAT OF Lazarus?

Pulling out of licensing now would cast doubt on CHRP, and, more importantly, Rhapsody. If Rhapsody is not going to be an open platform, why do it? I thought the point of Rhapsody was "develop once, deploy everywhere". If it's really "develop for Apple, deploy on Apple", what is the point?

Cancelling licences would hurt Apple badly, not merely because of the pall it would cast in the market, but because hundreds of millions, if not billions, of dollars have been poured into the companies that have been built on the promise of Mac licences. If Apple ducks out now, the lawsuits alone might bankrupt it.

Which brings me to Ellen Hancock, whose departure falls only slightly behind on the bonehead strategy list. In Hancock, Apple had one of the brightest people in IT working for it. I won't say *the* brightest, because I'll surely offend someone, but I can think of no-one brighter. As much good work as Amelio did, a very very large part of Apple's revival of fortunes has been Hancock's work. If the board of directors didn't want Amelio because of his habit of talking the company down, Hancock would have been an ideal replacement. As well as being a brilliant technologist, she is an exceptional communicator.

Instead, she was asked to leave, apparently because Jobs does not feel she is sufficiently "technical". Steve, take note: she was at IBM for almost 29 years, and she was not making tea. Letting that kind of talent slip through your fingers will only make the rumours of your downfall get louder.

If I were on the board of, say, a Mac licensee, I would be on the phone to Hancock right now offering whatever position she would like. I think it's fair to say that everyone in IT who doesn't work for Apple knows how strong a competitor she would be.

Then again, here's a thought: if she's feeling vengeful, maybe she could take what she's learned at Apple, add it to her own considerable skills and expertise, and form a startup company. Not exactly competing against Apple, but sort of in the same area. Get the new company's technology and business strategies exactly right, and sail along profitably for years — not getting so big that anyone wants to crush her, but just staying in the game.

Then, when Apple has floundered about blindly for a few more years, swoop in and rescue it, at least ostensibly. Don't accept an official job at Apple, but stay as CEO of Hancock Enterprises (hey, I'm making this up on the fly — clever names require thought). Then, when things are looking good again, sack the management and send Apple spiralling to its doom.

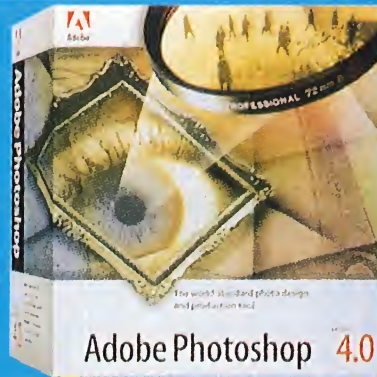
But who would do a thing like that?



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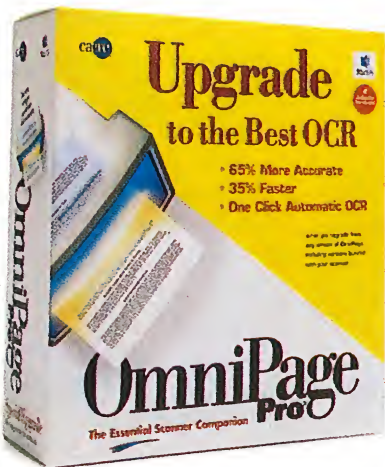
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OCR from within your favorite applications	✓	✓
Retains original layout	✓	



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